

H-Bomb Development: Decision on the Merits or Political Necessity?

A Monograph

by

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Abstract

H-Bomb Development: Decision on the Merits or Political Necessity, by Mr. Nathan D. Parks, Federal Bureau of Investigation, 65 pages.

This monograph employs a historical analysis to review the debate and subsequent decision within the US government in 1949 and 1950 over whether to pursue an accelerated program to develop thermonuclear weapons. The development of the thermonuclear bomb by the United States and Soviet Union in the early 1950s significantly altered the balance of power between nations and cemented the status of the United States and Soviet Union as superpowers. This paper addresses two fundamental questions: what led to the US decision to pursue thermonuclear weapons and how that decision was made.

Contents

Acronyms	v
Introduction	1
Crisis After Crisis	7
Thermonuclear Development to 1949	17
Soviet Atomic Explosion.....	22
US Response: The H-bomb?	27
Summary of the Participants' Positions	52
Did Truman Have a Choice...or Want One?.....	54
Bibliography	61

Acronyms

AEC	Atomic Energy Commission
GAC	General Advisory Committee
JCAE	Joint Committee on Atomic Energy
MLC	Military Liaison Committee
NSC	National Security Council
UN	United Nations
UNAEC	United Nations Atomic Energy Commission

Introduction

Indeed, I have sometimes the odd thought that the annihilating character of these agencies may bring an utterly unforeseeable security to mankind. It may be...that when the advance of destructive weapons enables everyone to kill everybody else nobody will want to kill anyone at all.

–Sir Winston Churchill, House of Commons, 3 November 1953

The development of the thermonuclear bomb by the United States and Soviet Union in the early 1950s was one of the most significant events in modern history.¹ The new weapon and its derivatives significantly altered the balance of power between nations and cemented the status of the United States and Soviet Union as superpowers, each with the capability to destroy any nation on earth in a manner unimaginable ten years earlier. The new weapon, combined with the antagonistic political ideologies of the two nations, also exacerbated the deepening Cold War, which shaped the latter half of the twentieth century and continues to influence international relations in the twenty-first. The decision to develop thermonuclear weapons leads to many interesting historical, political and military questions, but two of the most fundamental are what led to the United States decision to pursue them and how was the decision made. This paper attempts to answer those two questions, and in the process argues that despite a months-long debate, by the time the administration announced a decision President Truman had no other viable option but to pursue thermonuclear weapons.

Galison and Bernstein point out that “[t]he H-bomb debate was markedly unlike the A-bomb debate. The basic A-bomb debate occurred only after Nagasaki and V-J day. [T]he probing moral and political questions...posed during this period [late 1949] reached much further than

¹ The terms thermonuclear bomb or weapon, hydrogen bomb or H-bomb, and “Super” are used interchangeably in many historical documents as well as interpretive literature, and are thus used interchangeably in this paper. See page 17 for a brief description of the origins of these terms.

any debate that occurred during the building of the atomic bomb.”² The debate over the thermonuclear bomb occurred at a relatively early stage in its development, before the technical problems were resolved and it was known that such a device could be produced. The new weapon’s purpose was not to defeat the imminent threat posed by the marauding Axis powers of World War II, but the less defined threat of Soviet and communist expansionism. To address what led to the US decision to proceed with development requires a brief review of the historical and political context of the half-decade leading up to President Truman’s official decision in early 1950. While York and others argue that the debate and events precipitating President Truman’s decision began with the Soviet Union’s 29 August 1949 explosion of its first atomic bomb, what became known in the United States as Joe I, that is not really the beginning of the story.³ The US decision was not made in the context of five months of developments, but of five years of an evolving geopolitical landscape, the critical events of which started almost immediately after World War II’s end and reflected a deepening conflict between the West and the Soviet Union. We will begin with a short review of that history.

How the US decision was made is interesting because of the complicated technical and policy issues at stake, its strategic military and foreign policy significance, and the unusual political structures involved. The debate engendered significant disagreement, with both sides privately, and sometimes publicly, questioning the motives of the other. Its aftermath led in significant part to the eventual revocation of J. Robert Oppenheimer’s security clearance, but it

² Peter Galison and Barton Bernstein, “In Any Light: Scientists and the Decision to Build the Superbomb, 1952-1954,” *Historical Studies in the Physical and Biological Sciences* 19, no. 2 (1989), 268-269.

³ Herbert F. York, *The Advisors: Oppenheimer, Teller, and the Superbomb* (San Francisco: W.H. Freeman, 1976), 5, 33; Warner R. Schilling, “The H-Bomb Decision: How to Decide Without Actually Choosing,” *Political Science Quarterly* 76, no. 1 (March 1961), 24, accessed 25 September 2014, <http://www.jstor.org/stable/2145969>.

occurred almost entirely in secret.⁴ As a result, a relative handful of individuals were involved. They came from the civilian and military leadership of an array of executive branch departments, the unique Joint Congressional Committee on Atomic Energy (JCAE), and some nuclear scientists who had no official role, but still exerted significant influence. Many of the participants served on various special committees and working groups that were established specifically to address the thermonuclear issue in addition to their normal positions in interested departments, resulting in a web of relationships and interests that complicate a historical review of the debate.⁵

Different scholars have offered a variety of perspectives and opinions on the H-bomb decision and the events and personalities surrounding it. While this paper will not attempt a comprehensive review of the literature on the topic due to the scope of that undertaking, it will briefly highlight a few perspectives to give readers an appreciation for some of the arguments. Richard Hewlett authored the official three-volume history of the Atomic Energy Commission published between 1962 and 1989, collaborating with Francis Duncan on the second volume covering 1947-1952. Hewlett and Duncan's work remains a standard reference in the field for its comprehensive historical narrative and has been referenced by virtually every subsequent scholar examining the topic. It remains impressive today, but the authors' use of documents still classified at the time, need for government pre-publication approval, and the inherent limitations of writing an official agency history were undoubtedly significant factors in the relative lack of interpretation provided. Hewlett and Duncan imply without stating directly that the decision on

⁴ Norman Moss, *Men Who Play God: The Story of the H-bomb and How the World Came to Live with It* (New York: Harper & Row, 1968), 30; Gregg Herken, *The Winning Weapon: The Atomic Bomb in the Cold War, 1945-1950* (New York: Alfred A. Knopf, 1980), 341.

⁵ Herbert F. York, *The Advisors: Oppenheimer, Teller, and the Superbomb* (San Francisco: W.H. Freeman, 1976), 46-47.

thermonuclear development was in doubt until the last ten days of January 1950, when “it became ever clearer that the tide of opinion was moving in favor of the Super.”⁶

Scholarly interpretations of the H-bomb decision have evolved significantly over the last few decades. In the late 1970s David Alan Rosenberg focused on the disagreement between many civilian leaders and the US military over the H-bomb. He contended that the military’s concern over the immediate threat posed by Soviet conventional force superiority led military leaders, especially the Secretary of Defense and Air Force, to withhold information from Truman in 1949 that damaged their argument for more atomic weapons, and which may have affected Truman’s judgment later on the H-bomb question. Rosenberg concluded that Truman’s decision was motivated primarily by political considerations, but that the military played a significant role in shaping the decision through the control of information.⁷ In a different article, Rosenberg argued that early in his presidency Truman was only willing to consider using nuclear weapons as a last resort and focused primarily on promoting international control and establishing civilian control over the US program. By the late 1940s Truman had given up on international control and accepted nuclear arms as a necessity, but his national security staff offered minimal nuclear planning guidance beyond NSC-30, leaving the subject almost entirely to the military, which led to upward spiraling target lists and gross overkill.⁸ In the early 1980s, Gregg Herken argued that President Truman squandered an opportunity in 1948 and early 1949 to reassess the United States’ reliance on atomic weapons as the core of American defense strategy. The Russian atomic

⁶ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 362-409, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

⁷ David Alan Rosenberg, “American Atomic Strategy and the Hydrogen Bomb Decision,” *Journal of American History* 66, no. 1 (June 1979): 62-87.

⁸ David Alan Rosenberg, “The Origins of Overkill: Nuclear Weapons and American Strategy,” *International Security* 7, no. 4 (Spring 1983), 11-27.

explosion in August 1949 told US strategists nothing new about Soviet intentions, but those intentions suddenly seemed far more menacing, thus eliminating any serious policy reconsideration. Rather than re-examine US policy, Truman increased reliance on the same nuclear strategy that had formed the basis for US strategy over the previous few years.⁹ In the late 1980s, McGeorge Bundy argued that President Truman was stuck in a political conundrum where the Soviet Union would not accept intrusive inspections and the United States could not accept an arms control agreement without means of verification. As a result, the US position defaulted to development of the Super. Bundy looked dimly on the NSC Special Committee staff the Truman administration chose, noting that its use of government officials to staff the project aided Truman's desire for secrecy and control, but limited potential options.¹⁰ The literature of the late 1970s and 1980s focused heavily on internal politics within the administration and Washington, and the consensus view was that Truman made the decision to develop the H-bomb largely in response to domestic political pressures.

In the 1990s most interpretations focused increasingly on economic explanations and became more sympathetic to Truman's decision as US budget deficits precipitated by President Reagan's conventional force buildup supplanted the Soviet Union as a threat to the United States. Melvyn Leffler conceded that while President Truman spent little time considering non-nuclear options or directing his staff to pursue alternatives, atomic weapons were cheap in comparison to conventional forces, and Truman's desire to cut defense expenditures and increase social program spending resulted in plans that made the United States dependent on them in case of war. The United States' conventional force strength inferiority, precipitated by defense budget austerity,

⁹ Gregg Herken, *The Winning Weapon: The Atomic Bomb in the Cold War, 1945-1950* (New York: Alfred A. Knopf, 1980), 278-324.

¹⁰ McGeorge Bundy, *Danger and Survival: Choices About the Bomb in the First Fifty Years* (New York: Random House, 1988), 197-235.

coupled with the US commitment to defend Western Europe, resulted in a logical military position strongly in favor of atomic, and eventually thermonuclear, weapons superiority. The logic underpinning Truman's approval of increased atomic weapons production in October 1949 predictably led him to support developing the hydrogen bomb. Leffler concluded that the US decision to pursue the H-bomb was based primarily on a refusal to accept the decreased diplomatic options and influence that would result from losing a nuclear monopoly, and not on domestic political or military considerations.¹¹ In his mid-1990s work, *Dark Sun: The Making of the Hydrogen Bomb*, Richard Rhodes placed significant emphasis on the scientists involved in advocating both for and against the H-bomb. Rhodes also argued strenuously that Soviet espionage during the Manhattan Project played a significant role in shaping the US decision to proceed with thermonuclear development. In the late 1990s Michael Hogan expanded on Leffler's explanation, contending that the budget constraints Truman attempted to impose in the late 1940s were part of a larger rise of the national security state. The administration split between advocates of budget austerity, particularly defense budget austerity, and national security proponents concerned about the Soviet Union, represented primarily by the military. The logical conclusion to Hogan's argument was that nuclear weapons provided Truman with a deterrent that was more cost-effective than a large standing military, but still offered a means to protect American interests from the Soviet Union.¹²

The changing interpretations developed in a logical pattern when viewed in context. During the late 1970s and 1980s Rosenberg, Herken and Bundy were writing late in the Cold War, but particularly in the early 1980s it was not certain that the Cold War would end or how,

¹¹ Melvyn P. Leffler, *A Preponderance of Power: National Security, the Truman Administration, and the Cold War* (Stanford, CA: Stanford University Press, 1992), 323-331.

¹² Michael J. Hogan, *A Cross of Iron: Harry S. Truman and the Origins of the National Security State, 1945-1954* (New York: Cambridge University Press, 1998), 265-293.

leaving the legacy of Truman's H-bomb decision in doubt. The military's perspective in the H-bomb debate was accepted as understandable despite the questionable means its leaders employed, while scholars noted Truman's failure to conduct a nuclear policy review when he had the opportunity. By the 1990s and the end of the Cold War, the H-bomb decision appeared to have deterred Soviet aggression for forty years and Truman's decision was increasingly vindicated.

A few areas of controversy remain unresolved. Recent interpretations have focused on budgetary explanations for the H-bomb decision while ignoring the question of why, or whether, it was necessary to develop H-bombs in 1950 despite rapidly improving atomic weapons. As noted above, the roles of domestic politics and economic constraints on relevant US decisions have been addressed, but not resolved. Finally, as Francis Gavin pointed out, the role one power's policies played in shaping the other's policies remains an important and largely unaddressed question that should be investigated now that Cold War era documents are more available.¹³

Crisis After Crisis

While the topic of this paper is how the United States made the thermonuclear decision, understanding how and why the participants acted as they did requires a brief review of history from the end of World War II to the Soviet atomic explosion in August 1949. At the end of World War II most Americans hoped for and expected the world to return to peace. Many thought a new international organization would provide a forum for nations to peacefully resolve differences and prevent any recurrence of the type of catastrophic global war that had occurred twice in the previous three decades. That hope, and perhaps naiveté, led to the establishment of the United Nations in early 1946 as successor to the failed League of Nations. It was also the basis for a US

¹³ Francis J. Gavin, *Nuclear Statecraft: History and Strategy in America's Atomic Age* (Ithaca, NY: Cornell University Press, 2012), 22.

effort at international control of atomic energy, a goal then Under-Secretary of State Dean Acheson and then Chairman of the Tennessee Valley Authority David Lilienthal worked on extensively in developing the foundations of the Baruch Plan that Bernard Baruch presented to the United Nations in June 1946. Additional evidence of American post-war optimism and desire to put the fiscal costs of war behind it showed in President Truman's federal budgets. Despite significant global post-war security commitments, the US military declined from an active duty force of approximately 12.2 million and a peak budget of \$1.12 trillion (in 2003 dollars) in 1945 to a little over 1.5 million troops and a \$157 billion budget by mid-1947.¹⁴

Immediately after World War II the United States pursued plans to place atomic energy under international control with the expressed intent of removing the technology from the world's arsenals. At a December 1945 Council of Ministers in Moscow the United States and Soviet Union both endorsed in principle the destruction of all nuclear weapons and vesting control of atomic energy in an international body. In January 1946 the United Nations Atomic Energy Commission (UNAEC) was established for that purpose. US Secretary of State James Byrnes tasked then Under Secretary of State Dean Acheson and then Chairman of the Tennessee Valley Authority David Lilienthal with chairing a committee to develop a workable plan. Their report, known as the Acheson-Lilienthal Report, outlined a plan for international control and monitoring,

¹⁴ US Library of Congress, CRS, *Defense Budget for FY2003: Data Summary*, by Stephen Daggett and Amy Belasco, CRS Report RL31349 (Washington, DC: Office of Congressional Information and Publishing, 29 March 2002), 18, accessed 20 January 2015, <http://fpc.state.gov/documents/organization/9665.pdf>. In comparison, the Soviet military declined from approximately 12 million troops at the end of World War II to an estimated low of between 2.8 and 3.8 million in January 1948 before rising again to at least 3.9 million by January 1950. See Defense Advanced Research Projects Agency, *The Evolution of Soviet Military Forces and Budgets, 1945-1953*, by Abraham S. Becker and Edmund D. Brunner, DARPA Report WN(L)-9248-ARPA (September 1975), 3-8, accessed 2 March 2015, http://www.dod.mil/pubs/foi/Science_and_Technology/DARPA/551.pdf. No comparison of US and USSR expenditures was attempted due to the difficulty in comparing differing currencies and economic systems. However, from 1945 to 1947 the USSR's military expenditures dropped 48%, but then increased 47% from 1947 to 1950, adjusted for inflation. See DARPA report, pages 19-37.

and served as the basis for the plan that Bernard Baruch presented to the UNAEC at its first meeting in June 1946. The United States pursued its plan despite mounting evidence that the Soviet Union was actively pursuing a nuclear weapons program, perhaps in the hope that an agreement would lead the USSR to terminate its program.¹⁵ However, it soon became clear that the US push for international control was unlikely to succeed. The Soviet Union consistently used its UN veto power to block resolutions, objecting that the international community was dominated by the United States and its allies. On the other hand, the US-sponsored proposals often lacked the universal application one might expect of a disarmament offer.¹⁶ While the United States never publicly abandoned efforts at international control, there was no serious attempt to institute such a plan after 1947. NSC-30, the result of discussions begun in early 1948, made clear that the United States anticipated the continued existence and potential use of atomic weapons, stating in part, “[a]ny attempt now or in the future under these circumstances [the absence of international control], to prohibit or negatively to qualify the employment of atomic bombs could end catastrophically.”¹⁷

In a related development, during late 1945 and 1946 the Truman administration and Congress were debating the future domestic control of the US nuclear enterprise. Initially, the Army attempted to solidify its control of atomic energy in the post-war United States through the

¹⁵ In September 1945 the War Department learned that the Soviets were forcing Czechoslovak military officers to turn over all information recovered on German atomic energy, rocket weapons and radar systems programs. In addition, Soviet troops controlled the only producing uranium mine in Europe. See Richard Rhodes, *The Making of the Atomic Bomb* (New York: Simon & Schuster, 1986), 760.

¹⁶ There is a full range of opinions on the sincerity of US proposals. See Thomas E. Murray, *Nuclear Policy for War and Peace* (New York: World Publishing Company, 1960), 72, for an argument that the US offers were magnanimous and sincere. See Melvyn P. Leffler, “The American Conception of National Security and the Beginnings of the Cold War, 1945-48,” *American Historical Review* 89, no. 2 (April 1984), 371, for the argument that the US position was one-sided and disingenuous. Other scholars’ assessments fall between these arguments.

¹⁷ *Foreign Relations of the United States, 1948*, Vol. I, 624-628.

Royall-Marbury bill, drafted by War Department attorneys in July 1945. That bill eventually became the May-Johnson bill in Congress, but by late 1945 widespread opposition had severely damaged its chances of passage, largely because opponents viewed it as contrary to efforts at international control and the development of peaceful applications for nuclear power. By October 1945 Senator Brien McMahon was drafting rival legislation that would ensure civilian control. The McMahon bill became the Atomic Energy Act of 1946, which invested control of the US nuclear enterprise in the civilian Atomic Energy Commission and established the JCAE.¹⁸ This paper will discuss the impact of those new structures later.

Meanwhile, signs that the country's idealistic optimism was misplaced came quickly. On 9 February 1946 Josef Stalin gave a public address at the Bolshoi Theater on the eve of the first Soviet elections since 1937. His speech shocked the West with a declaration that war between socialists and capitalists was inevitable, and that the Soviet Union would aggressively rearm in preparation for that coming conflict.¹⁹ Less than two weeks later George Kennan, then *Chargé d'Affaires* at the American Embassy in Moscow and one of the United States' most experienced Russia specialists, wrote what became known as the "Long Telegram" in response to a State Department request for analysis of the Soviet position. In his report Kennan argued that the Soviets would not live in "permanent peaceful coexistence" with capitalist countries and "seek security only in patient but deadly struggle for total destruction of rival power, never in compacts and compromises with it."²⁰ While Kennan's report was a classified Department of State document, its broad conclusions were published in July 1947 by *Foreign Affairs* under the pseudonym "X," significantly broadening its audience and influence. Acheson later pointed to the

¹⁸ Gregg Herken, *The Winning Weapon: The Atomic Bomb in the Cold War, 1945-1950* (New York: Alfred A. Knopf, 1980), 116-125.

¹⁹ For the text of Stalin's speech see *New York Times*, 10 February 1946, 30.

²⁰ *Foreign Relations of the United States, 1946*, Vol. VI, 696-709.

continuing influence of the “Long Telegram” when he stated of Kennan’s report, “[h]is historical analysis might or might not have been sound, but his predictions and warnings could not have been better.”²¹

A few days after Kennan sent his report to Washington, Winston Churchill, no longer Britain’s Prime Minister, but accompanied by President Truman, gave a speech at Westminster College in Fulton, Missouri. His address received front page coverage in the 5 March 1946 *New York Times*. In it, Churchill voiced the famous words, “an iron curtain has descended across the Continent.” He went on to argue “that there is nothing they [the Soviets] admire so much as strength, and there is nothing for which they have less respect than for weakness, especially military weakness.”²² While Churchill later stated he did not view war with the Soviet Union as inevitable or imminent, in retrospect it is clear from the pronouncements of Soviet, US and British leaders that in less than a month the disagreement between the United States and USSR was taking shape as not just an ideological struggle, but also in the economic, geographic and military realms.

Meanwhile, beginning in late 1945 and continuing through 1946 the Soviet Union made aggressive moves toward Iran and Turkey. It forced Iran to grant oil concessions while partially occupied by Soviet troops and massed troops on Turkey’s borders in apparent preparation for an invasion. In mid-March 1946 President Truman privately contemplated the possibility of war with the Soviet Union over interests in Iran while publicly downplaying the potential conflict. Soon thereafter tension with the USSR over Turkey threatened to degenerate into a shooting war. A Soviet spy in Washington corrected Moscow’s miscalculation that the United States would not

²¹ Dean Acheson, *Present at the Creation: My Years in the State Department* (New York: W.W. Norton, 1969), 151.

²² Winston Churchill, “Sinews of Peace, 1946,” National Churchill Museum, accessed 10 January 2015, <http://www.nationalchurchillmuseum.org/sinews-of-peace-iron-curtain-speech.html>.

intervene, preventing a likely war. Mark argued that the crises in Iran and, especially, Turkey were pivotal in changing US policy-makers' perceptions of the likelihood of war with the Soviet Union. In what could be seen as a precursor to the containment-oriented Truman Doctrine, US policy toward the Near and Middle East changed in March 1946 from relative disinterest to a decision that Turkey's independence from Soviet control warranted US intervention.²³ Mark further asserted that, contrary to arguments by Leffler that the United States took advantage of a non-threatening situation to advance its interests, the US reaction to the USSR's moves was reasonable when evaluated in light of the information Washington possessed and its strategic interests.²⁴ Ultimately, while the Soviet Union withdrew its forces from Turkey's borders almost overnight in autumn 1946, the near war caused Stalin to reassess the United States' willingness to defend its interests, and led him to take a more cautious approach during the Berlin crisis the following year.

In September 1946 two additional noteworthy documents were drafted that further clarified the assessments of leaders in both the US and Soviet governments. On 24 September Clark Clifford, Special Counsel to President Truman, sent the President a lengthy top secret report entitled "American Relations with the Soviet Union" in response to Truman's request for a summary of United States-Soviet Union foreign relations. In the transmittal letter Clifford noted that he consulted with most of the senior national security figures in the Truman Administration from the diplomatic, intelligence and military arenas and stated, "there is remarkable agreement

²³ Eduard Mark, "The War Scare of 1946 and its Consequences," *Diplomatic History* 21, no. 3 (Summer 1997): 385-392.

²⁴ Melvyn P. Leffler, "Strategy, Diplomacy, and the Cold War: The United States, Turkey, and NATO, 1945-1952," *Journal of American History* 71, no. 4 (March 1985): 807-825; Eduard Mark, "The War Scare of 1946 and its Consequences," *Diplomatic History* 21, no. 3 (Summer 1997): 412.

among the officials with whom I have talked” about the problem of US-Soviet relations.²⁵ In his report Clifford began with the assertion that “[t]he gravest problem facing the United States today is that of American relations with the Soviet Union. The solution of that problem may determine whether or not there will be a third World War.”²⁶ He proceeded with an assessment very similar to that which Kennan presented several months earlier, stating, “[t]he fundamental tenet...embraced by Soviet leaders is that peaceful coexistence of communist and capitalist nations is impossible” and “it is their duty to prepare the Soviet Union for...inevitable conflict.”²⁷ Clifford summed up Soviet policy: “The key to an understanding of current Soviet foreign policy, in summary, is the realization that Soviet leaders...strive to postpone the inevitable conflict in order to strengthen and prepare the Soviet Union for its clash with the western democracies.”²⁸ Leffler argued that the Clifford-Elsey Report served chiefly as a brief supporting Truman’s desired policy rather than as a tool to inform it, and that the report was heavily biased in many regards.²⁹ Regardless of its merits or precise role, it and Kennan’s “Long Telegram” were key early Cold War national security documents that shaped and supported the Truman administration’s foreign policy toward the Soviet Union.³⁰

²⁵ Clark Clifford transmittal letter to President Truman, dated 24 September 1946, accompanying report “American Relations with the Soviet Union,” accessed 19 September 2014, <https://www.trumanlibrary.org/4-1.pdf>.

²⁶ Clark Clifford report to Harry Truman dated September 24, 1946, “American Relations with the Soviet Union,” 1, accessed 19 September 2014, <https://www.trumanlibrary.org/4-1.pdf>.

²⁷ *Ibid.*, 3-7.

²⁸ *Ibid.*, 9.

²⁹ Melvyn P. Leffler, *A Preponderance of Power: National Security, the Truman Administration, and the Cold War* (Stanford, CA: Stanford University Press, 1992), 130-138.

³⁰ Michael J. Hogan, *A Cross of Iron: Harry S. Truman and the Origins of the National Security State, 1945-1954* (New York: Cambridge University Press, 1998), 10-13. Truman’s announcement of the Truman Doctrine and NSC-68 were the other two documents identified by Hogan.

Three days after the Clifford-Elsey report, and evidently unknown to US officials at the time, Nikolai Novikov, the Soviet Ambassador to the United States, sent his own telegram to Soviet leadership assessing US foreign policy. His telegram has been likened to the “Long Telegram” since it was also drafted by the top diplomatic representative of the opposing power and dealt with the same subject matter, but from a Soviet perspective. Novikov began with his own assertion that “US foreign policy has been characterized in the postwar period by a desire for world domination” and asserted US plans for “world domination” numerous times throughout his report. Novikov concluded that “American preparations for a future war are being conducted with the idea of war against the Soviet Union, which in the eyes of American imperialists is the chief obstacle in the American path to world domination.”³¹ While there is no evidence to suggest that Novikov’s assessment was known to the United States, and therefore played no direct role in US policy, it is indicative of contemporary Soviet understanding of US intentions. Vojtech Mastny concluded that Stalin did not believe “his capitalist enemies would ever be appeased,” which meant “[s]omehow and somewhere, the insurmountable tension would...lead to a showdown, for which his [Stalin’s] country was not yet prepared.”³²

Events rapidly unfolded that bolstered the position of those who advocated a hard line in relations with the Soviet Union. In 1947 Greece was fighting a civil war against a communist insurgency. The Soviet Union created the Cominform (successor to the pre-World War II Communist International, or Comintern) to assert leadership and control over the international communist movement, although Stalin’s ability to enforce control was always constrained by local political factors in other countries. President Truman announced the Truman Doctrine to

³¹ Telegram from Nikolai Novikov to the Soviet Leadership, dated 27 September 1946, accessed 1 November 2014, <http://digitalarchive.wilsoncenter.org/document/110808>.

³² Vojtech Mastny, *The Cold War and Soviet Insecurity: The Stalin Years* (New York: Oxford University Press, 1996), 192-193.

counter the growing Soviet influence, which had successfully spread communism throughout Eastern and Central Europe and threatened other countries, framing the conflict as a struggle between democratic countries and totalitarian regimes, and articulating the US plan to contain the spread of communism. Announcement of the Marshall Plan, designed to provide economic support to any European country that wanted to participate as a way to reduce internal pressure on foreign governments, soon followed.

Major events in 1948 continued to heighten tensions between the two sides. In February 1948 USSR-aligned communists in the Czechoslovakian government seized power amid growing unrest. In January 1947 the United States and Britain had combined their post-World War II occupation zones in Germany and began economic rebuilding efforts that eventually led to the Marshall Plan in April 1948. In response to the growing economic influence of the United States in Europe, in June 1948 Stalin initiated a blockade of landlocked Berlin, cutting off supplies to the divided city located in Soviet-controlled territory. That significant escalation of conflict between the Soviet Union and the West resulted in the US-led Berlin Airlift that continued until the Soviets finally capitulated in May 1949.

The political rift and broad fundamental ideological disagreement between the United States and USSR demonstrated above were also increasingly clear to the American public, which became increasingly skeptical of its new geopolitical rival. Polling data from Gallup and the National Opinion Research Center showed that in 1943 approximately 60% of respondents with an opinion “trusted [Russia] to cooperate with us when the war is over.” By 1945 that percentage had declined to about 45%, and by 1947 more than 70% believed the Russians could *not* be trusted to cooperate (emphasis added).³³ A June 1948 poll found 53% of respondents thought the

³³ “A Half Century’s Polling on the USSR and Communism,” *The Public Perspective* 3, no. 1 (November/December 1991), 29, accessed 16 January 2015, <http://www.ropercenter.uconn.edu/publicperspective/ppscan/31/31025.pdf>.

United States “should be even firmer” in its policies dealing with the Soviet Union while only 10% thought the United States should be “more willing to compromise.” Finally, an April 1950 poll found that 83% of respondents thought it was “very important” for the United States to try to stop the spread of communism in the world, while 4% thought containment was “not important.”³⁴ A natural result of the steadily increasing popular opposition to the Soviet Union and spread of communist ideology was the reflection of that mood in domestic politics. Whether popular opinion shapes politics or politicians shape popular opinion can be debated, but when the two are closely aligned and overwhelmingly lopsided, as in this case, they strengthen and reinforce each other.

The administration’s analysis of the Soviet Union had not changed when President Truman announced his decision on the Super. A February 1950 paper entitled “Soviet Intentions and Capabilities” found in the President’s papers opened with this unambiguous paragraph: “The avowed basic intention of the USSR is to engage in ‘competition’ with the US until the US is destroyed, or forced to capitulate. The Soviet concept of ‘competition’ with the US is – demonstrably – to wage a relentless, unceasing struggle in which any weapon or tactic which promises success is admissible.”³⁵ At the highest levels, both sides assessed the other as an intractable and dangerous opponent.

The purpose of this short review was to illustrate the trend of events in the late 1940s. Nearly every world event during the period pointed to rapidly worsening relations between the United States and a Soviet Union actively destabilizing non-communist countries with the objective of installing communist regimes. The Soviet government, having argued that it was the

³⁴ Ibid., 30.

³⁵ Unsigned 20 February 1950 draft report entitled “Soviet Intentions and Capabilities,” 1, accessed 8 March 2015, http://www.trumanlibrary.org/whistlestop/study_collections/bomb/large/documents/pdfs/78.pdf. The author and context of this document are unknown.

leader of worldwide communism and therefore logically viewed in the US as synonymous with that ideology, was aggressively advancing its aims on an increasingly broad front, challenging adversaries and targets militarily, politically, socially and economically. Tensions between the Soviet Union and the United States in particular were escalating and positions hardening as a wave of hostile moves and countermoves threatened to draw the new superpowers into open conflict. Both sides were advancing rhetoric, analyses, policies, and military actions that could be deemed threatening, if not overtly hostile, by their opponent. The importance of this context to the US thermonuclear decision cannot be ignored because it colored the views of the US public and the policy makers who worked for it.

Thermonuclear Development to 1949

Most of America's top physicists and many émigré scientists fleeing Europe were involved in the Manhattan Project during World War II. Many of them also continued to play important roles in the post-war nuclear enterprise. Among the most important of that sub-set were J. Robert Oppenheimer, the war-time director of Los Alamos and later chairman of the AEC's General Advisory Committee; Edward Teller, the most ardent proponent of the H-bomb both during and after the war; Bethe, who served as director of Los Alamos's Theoretical Division during the war and later helped with H-bomb development in the hope of proving it could not be made; and Ernest Livermore, the inventor of the cyclotron and another strong post-war advocate for the H-bomb.

The thermonuclear bomb was known by several names – as a fusion bomb for its method of reaction, a hydrogen bomb for its primary fuel, or the Super in reference to its superior power in comparison to fission, or atomic bombs. The theory of using a nuclear fusion reaction as the basis for an explosion existed from the earliest days of nuclear weapons development. Early in the twentieth century scientists theorized that stars generated their energy from some form of nuclear reaction. In the 1930s Hans Bethe developed the theory that thermonuclear fusion was the

source of that energy, but the extraordinary heat and pressure conditions he hypothesized were so extreme in comparison to anything known on earth that no serious thought was given to trying to replicate the reaction.³⁶ However, by 1942 scientists working on the Manhattan Project revisited Bethe's theory and discussed it as the basis for a new weapon. Edward Teller concluded initially that a fission bomb could not trigger a fusion reaction in deuterium, but by the time he arrived in Berkeley for a conference Oppenheimer called to discuss setting up the Los Alamos laboratory in summer 1942 Teller had changed his mind. The topic of a thermonuclear bomb was discussed thoroughly during that conference, and the idea of using a mixture of tritium and deuterium as fuel was first proposed.³⁷

When the Los Alamos laboratory was established, among the staff's original tasks was the development of thermonuclear weapons. However, the greater than expected challenge of developing fission bombs required most of the attention and effort of both the laboratory and larger Manhattan Project enterprise. Despite the laboratory's priorities, Teller, an early and vocal proponent of thermonuclear weapons, led a small team of scientists who devoted most of their effort to thermonuclear fusion, in the process conceiving a design that became known as the "classical Super." By the end of the war some theoretical work had been completed, but all that was clear was that thermonuclear was nowhere near a reality. In fact, it remained a matter of considerable debate at Los Alamos whether it was even technically possible. Among other issues, the inability to compute the complex calculations necessary to model the necessary fission/fusion

³⁶ Herbert F. York, *The Advisors: Oppenheimer, Teller, and the Superbomb* (San Francisco: W.H. Freeman, 1976), 21.

³⁷ For a detailed discussion of the 1942 conference see Anne Fitzpatrick, "Igniting the Light Elements: The Los Alamos Thermonuclear Weapon Project, 1942-1952," (PhD diss., Virginia Polytechnic Institute, 1999), 102-105, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/10596>.

reactions was a significant problem, for which the earliest solution in the form of the first electronic computer known as ENIAC, remained on the horizon.

At the conclusion of World War II it was not clear how, or even if, further development of nuclear weapons would continue. General Groves was uncertain whether the Manhattan Engineering District's mandate extended beyond the atomic bombs used to end the war.³⁸ The United States government had hoped to keep atomic weapon design information secret after the war and plans to build more bombs were almost non-existent. Some early post-war national war plans did not envision the use of nuclear weapons at all.³⁹ There were officially two atomic bombs in the US inventory on 31 December 1945, but they were in component form, not assembled. According to an official Department of Defense history, in mid-1946 the US weapons stockpile consisted of nine Fat Man bombs, for which there existed initiators for only seven.⁴⁰ The Atomic Energy Act was not signed by President Truman until 1 August 1946, and the Atomic Energy Commission, which transferred the development, construction, and control of the US nuclear arsenal to civilian control, was not established until 1 January 1947, leaving the entire program in a state of uncertainty for more than a year. By mid-1947 the United States officially had thirteen fission bombs, although David Lilienthal, the first Chairman of the Atomic Energy

³⁸ Herbert F. York, *The Advisors: Oppenheimer, Teller, and the Superbomb* (San Francisco: W.H. Freeman, 1976), 18; David Alan Rosenberg, "American Atomic Strategy and the Hydrogen Bomb Decision," *Journal of American History* 66, no. 1 (June 1979): 62-87; and Anne Fitzpatrick, "Igniting the Light Elements: The Los Alamos Thermonuclear Weapon Project, 1942-1952" (PhD diss., Virginia Polytechnic Institute, 1999), accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/10596>. York noted that General Groves tried to reassure Los Alamos staff after the war that the nuclear weapons program had a future, but that it was clear he was only expressing his personal views, not official policy. Rosenberg provided an excellent summary of the low priority given to the post-war US nuclear program.

³⁹ David M. Kunsman and Douglas B. Lawson, *A Primer on US Strategic Nuclear Policy* (Albuquerque, NM: Sandia National Laboratories, January 2001), 22.

⁴⁰ Fat Man was the code name for the implosion-type atomic bomb dropped on Nagasaki in August 1945. The design remained in service until 1950.

Commission (AEC), later recalled that only one bomb was “probably operable” when the AEC assumed control on 1 January 1947.⁴¹ On 3 April 1947 Lilienthal informed President Truman that there were no atomic weapons in the US arsenal available for immediate use, apparently the first time Truman became aware of the minimal extent of the nation’s atomic stockpile.⁴² Just as telling about the state of the nation’s nuclear enterprise was that in 1947 there were no teams trained and available to assemble the components.⁴³

Most of the key scientists on the Manhattan Project left the program in autumn 1945 to resume their interrupted academic careers at a variety of prestigious universities across the country, leaving morale low and the Los Alamos laboratory staff gutted.⁴⁴ Los Alamos’s F Division, responsible for theoretical and nuclear physics research, peaked at approximately 100 scientists in late spring 1945, but by the end of 1946 the laboratory employed only eight theoretical physicists, before slowly recovering to twenty-two by 1949.⁴⁵ The scientists had different reasons for leaving. While Galison and Bernstein pointed out that various scientists’

⁴¹ Steven L. Rearden, *The Formative Years, 1947-1950* (Washington, DC: Historical Office, Office of the Secretary of Defense, 1984), 439-441; Alice Buck, *The Atomic Energy Commission* (US Department of Energy, Office of Management, Office of the Executive Secretariat, Office of History and Heritage Resources, July 1983), 33, accessed 15 September 2014, <http://energy.gov/sites/prod/files/AEC%20History.pdf>.

⁴² Richard Rhodes, *Dark Sun: The Making of the Hydrogen Bomb* (New York: Simon & Schuster, 1995), 283-284.

⁴³ Harry S. Truman, *Memoirs* (Garden City, NY: Doubleday, 1956), 296; McGeorge Bundy, *Danger and Survival: Choices about the Bomb in the First Fifty Years* (New York: Random House, 1988), 202.

⁴⁴ Roger M. Anders, *Forging the Atomic Shield* (Chapel Hill: University of North Carolina Press, 1987), 8.

⁴⁵ David Hawkins, *Manhattan District History, Project Y, The Los Alamos Project*, vol. I, (Los Alamos, NM: Los Alamos Scientific Laboratory, 1 December 1961), 301, accessed 12 April 2015, <http://library.lanl.gov/cgi-bin/getfile?LAMS-2532.htm>; J. Carson Mark, *A Short Account of Los Alamos Theoretical Work on Thermonuclear Weapons, 1946-1950* (Los Alamos, NM: Los Alamos Scientific Laboratory, July 1974), 3, accessed 15 September 2014, <http://atomicarchive.com/Docs/pdfs/00377295.pdf>.

positions were inconsistent and changed dramatically over the longer time period from the early 1940s to 1949, it is clear that some had strong reservations about the morality of nuclear weapons in the aftermath of their use in 1945.⁴⁶ Meanwhile, the uncertainty surrounding the nuclear program's future pushed others away. Edward Teller firmly believed that "Russia was just as dangerous an enemy as Germany had been."⁴⁷ He considered staying at Los Alamos as head of the Theoretical Division and encouraged others to stay. However, when Bradbury, then the newly appointed director of Los Alamos, dismissed Teller's insistence on twelve weapons tests a year as impractical and Oppenheimer refused Teller's request to lobby for the expansion of nuclear weapons work Teller decided to move to the University of Chicago to work with Enrico Fermi instead, although he continued to spend summers and holidays as a consultant at Los Alamos.

As a result of these challenges and the desire to devote resources to improving the already successful fission bomb, work on the thermonuclear concept remained slow after the war, although, contrary to Teller's later claims, it did not stop.⁴⁸ In April 1946 thirty-one scientists including Teller, John von Neumann, Stanislaw Ulam, Bradbury, and Klaus Fuchs met at Los Alamos for a secret conference to re-examine the feasibility of the thermonuclear bomb concept Teller's team had devised during the war. The conference issued a report entitled "Report of

⁴⁶ Peter Galison and Barton Bernstein, "In Any Light: Scientists and the Decision to Build the Superbomb, 1952-1954," *Historical Studies in the Physical and Biological Sciences* 19, no. 2 (1989): 269.

⁴⁷ Stanley A. Blumberg and Gwinn Owens, *Energy and Conflict: The Life and Times of Edward Teller* (New York: G.P. Putnam's Sons, 1976), 185.

⁴⁸ Herbert F. York, *The Advisors: Oppenheimer, Teller, and the Superbomb* (San Francisco: W.H. Freeman, 1976), 22-26. For a defense of the laboratory's efforts see J. Carson Mark, *A Short Account of Los Alamos Theoretical Work on Thermonuclear Weapons, 1946-1950* (Los Alamos, NM: Los Alamos Scientific Laboratory, July 1974). For a detailed examination of technical impediments to fusion development work see also Ann Fitzpatrick, "Igniting the Light Elements: The Los Alamos Thermonuclear Weapon Project, 1942-1952" (PhD diss., Virginia Polytechnic Institute, 1999), accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/10596>.

Conference on the Super” in which it concluded that the design was probably workable, but that the only way to be certain was to build and test it. Manual calculations and the enormous complexity of nuclear fusion had limited the design team to only rough calculations. The conference report noted that certain aspects of the design were the subject of some doubts, but that simple modifications could resolve them.⁴⁹ The conference ultimately concluded that a “further decision in a matter so filled with the most serious implications as is this one can properly be taken only as part of the highest national policy.”⁵⁰ However, the potential for thermonuclear weapons did not reach the desks of top policy makers. President Truman’s later disinclination to reconsider US dependence on atomic weapons in 1948 and early 1949 indicates he would have had little appetite to make such a decision if it had, particularly given the assumption of a continued US atomic monopoly.

The uncertainty surrounding the nuclear weapons program and concurrent departure of many top scientists, the lack of computing power sufficient to fully develop the theoretical calculations for nuclear fusion, and eventually a devotion of resources to improving and stockpiling atomic weapons rather than developing the unknown and arguably unnecessary hydrogen bomb all led to slow progress on the new weapon. Thus, in late 1949 thermonuclear weapons remained a theoretical weapon that many scientists were uncertain would work.

Soviet Atomic Explosion

⁴⁹ In retrospect, the conference’s conclusions about the viability of the Super design as proposed were overly-optimistic. The advent of electronic computing and invention of the Teller-Ulam design in 1950 were necessary to resolve the technical problems inherent in earlier designs.

⁵⁰ Richard Rhodes, *The Making of the Atomic Bomb* (New York: Simon & Schuster, 1986), 764-765. See J. Carson Mark’s *A Short Account of Los Alamos Theoretical Work on Thermonuclear Weapons, 1946-1950* for an excellent short history of the technical development work conducted on thermonuclear weapons during that period. For additional discussion of early H-bomb development see Hans A. Bethe, “Comments on the History of the H-Bomb,” *Los Alamos Science* 3, no. 3 (Fall 1982) 43-53.

On 3 September 1949 a routine US Air Force monitoring flight picked up traces of radioactive material barely above the established threshold in the atmosphere between Japan and Alaska. The alert, coming on Saturday of Labor Day weekend, was unexpected and the initial results were ambiguous. However, additional flights and laboratory analysis quickly made clear that a nuclear detonation had occurred, although it was unclear whether it was a weapon.⁵¹ On 9 September the Central Intelligence Agency notified the White House of the possible findings.⁵² William Webster, the civilian Chairman of the Military Liaison Committee to the AEC, was concerned that drawing firm conclusions would require a sophisticated interpretation of the facts, so he discussed appointing a panel of prominent scientists to evaluate the evidence with Carroll Wilson, the general manager of the AEC. The AEC Commissioners agreed to appoint a four member panel chaired by Vannevar Bush, who had by that time been a prominent scientist in the private sector and government service for 30 years. The other members were Oppenheimer, Robert F. Bacher and W.S. Parsons. By 14 September, after additional testing and analysis, most of those at the Air Force Long Range Detection Center and the AEC concluded that a Soviet weapon test generated the radiation.⁵³ However, Secretary of Defense Louis Johnson was a notable holdout, rejecting what Webster argued ninety-five percent of scientists accepted until Bush's committee released its report.⁵⁴

⁵¹ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 363-364, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

⁵² Steven L. Rearden, *The Formative Years, 1947-1950* (Washington, DC: Historical Office, Office of the Secretary of Defense, 1984), 497.

⁵³ Kenneth W. Condit, *The Joint Chiefs of Staff and National Policy, 1947-1949* (Washington, DC: Office of Joint History, Office of the Chairman of the Joint Chiefs of Staff, 1996), 279.

⁵⁴ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 364, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>; Keith D. McFarland and David L. Roll, *Louis Johnson and the*

On 19 September the special panel convened to formally review the evidence. It heard from military and AEC scientists who had conducted the analysis as well as several other prominent scientists, and concluded with a session with the AEC Commissioners. The report it drafted was unanimous in concluding that the evidence was “consistent with the...explosion of an atomic bomb” in late August 1949. The AEC sent the report to the President the same afternoon. Oddly, the Department of State was not notified of the likely Soviet explosion until late on 19 September.⁵⁵ After a full review of the evidence with the Joint Chiefs on 21 September, President Truman accepted the findings, although he remained skeptical that “those asiatics” could have built an atomic bomb and required each member of the special panel to sign a statement that the member believed the Soviets had tested a weapon.⁵⁶ After the President’s grudging acceptance of the finding he immediately called the chairman and ranking member of the JCAE and invited them to the White House the following day. Senator McMahon came alone because the ranking Republican member, Bourke Hickenlooper, was out of town. The President showed McMahon a

Arming of America: The Roosevelt and Truman Years (Bloomington, IN: Indiana University Press, 2005), 214-215.

⁵⁵ Dean Acheson, *Present at the Creation: My Years in the State Department* (New York: W.W. Norton, 1969), 312-313. Department of State records also corroborate the lack of notification through the absence of any records in *Foreign Relations of the United States*.

⁵⁶ Herbert F. York, *The Advisors: Oppenheimer, Teller, and the Superbomb* (San Francisco: W.H. Freeman, 1976), 34; Keith D. McFarland and David L. Roll, *Louis Johnson and the Arming of America: The Roosevelt and Truman Years* (Bloomington, IN, Indiana University Press, 2005), 215. President Truman’s meeting with the Joint Chiefs is not listed on the Truman Library’s online Presidential Appointments Calendar although both York and McFarland reference it. See “The President’s Day: Wednesday, September 21, 1949,” Harry S. Truman Library and Museum, accessed 20 March 2015, <http://www.trumanlibrary.org/calendar/main.php?currYear=1949&currMonth=9&currDay=21>. In his account of these events Truman described his surprise “that the Russians had made progress at a more rapid rate than was anticipated,” but did not mention any skepticism, instead stating of the evidence “there was no room for doubt.” See Harry S. Truman, *Memoirs, Vol. II* (Garden City, NY: Doubleday, 1956), 306-307.

copy of the Bush report and told the senator he would be making a public statement releasing the information the next day.⁵⁷ On 23 September 1949 Truman issued the following public statement:

We have evidence that within recent weeks an atomic explosion occurred in the USSR. Ever since atomic energy was first released by man, the eventual development of this new force by other nations was to be expected. This probability has always been taken into account by us. Nearly four years ago I pointed out that “Scientific opinion appears to be practically unanimous that the essential theoretical knowledge upon which the discovery is based is already widely known. There is also substantial agreement that foreign research can come abreast of our present theoretical knowledge in time.”⁵⁸

The Soviet Union’s atomic device test on 29 August 1949 caught most in the United States off-guard. Immediately after World War II many scientists and intelligence officials estimated that it would take the Soviets about five years to build a bomb. Hans Bethe and Fred Seitz argued in a 1946 essay for the book *One World or None* that “we are led by quite straightforward reasoning to the conclusion that any one of several determined nations could duplicate our work in a period of about five years.”⁵⁹ That estimate was fairly consistent among scientists, but not universally accepted. Vannevar Bush, one of the most respected scientists in the country, had a book, *Modern Arms and Free Men*, at the printer that predicted the first Soviet atomic bomb was another ten years away when the Soviet explosion occurred. The presses were stopped so he could revise the manuscript.⁶⁰ General Groves estimated that it would take the Soviets twenty years because of the limited worldwide supply of high quality uranium ore, a lack of Soviet technical and scientific skill, and the Soviets’ mistrust of any intelligence they obtained

⁵⁷ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 367, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>; Harry S. Truman, *Memoirs, Vol. II* (Garden City, NY: Doubleday, 1956), 307.

⁵⁸ US Department of State, *Department of State Bulletin* XXI, no. 535 (October 3, 1949): 487. See also Harry S. Truman, *Memoirs, Vol. II* (Garden City, NY: Doubleday, 1956), 307-308.

⁵⁹ Herbert F. York, *The Advisors: Oppenheimer, Teller, and the Superbomb* (San Francisco: W.H. Freeman, 1976), 35.

⁶⁰ Stanley A. Blumberg and Gwinn Owens, *Energy and Conflict: The Life and Times of Edward Teller* (New York: G.P. Putnam’s Sons, 1976), 199.

from the American program. Widespread disdain for the Soviets' technical ability was illustrated by a popular joke at the time concerning the Soviet capability to deliver an atomic bomb in a suitcase. According to the joke, Americans did not need to worry about a suitcase bomb because the Soviets could not construct a suitcase.⁶¹ While there was wide disagreement, York noted that the scientists generally predicted quicker Soviet success, while politicians and administrators tended to favor estimates of a more enduring American atomic monopoly.⁶²

While the United States was surprised, the implications of the Soviet Union hypothetically obtaining an atomic bomb had been discussed. In fact, less than two weeks before the Soviet explosion the Department of State's Policy Planning Staff drafted a report on the "Political Implications of Detonation of Atomic Bomb by the USSR."⁶³ It is illustrative to note that the report spoke about the importance of knowing when the Soviet Union had obtained a bomb because of the potential need to adjust American foreign policy, but gave no indication that it was an imminent concern. As Schilling and Condit both pointed out, poor intelligence and continuing disagreement on the use of nuclear weapons in foreign policy resulted in a lack of pressure on the AEC and Departments of Defense and State to make plans to prepare for a nuclear-armed Soviet Union.⁶⁴

Regardless of the varying estimates for the Soviet Union's time to acquire a bomb, it was widely accepted that America's monopoly would not last forever. The official Joint Intelligence

⁶¹ Richard Rhodes, *Dark Sun: The Making of the Hydrogen Bomb* (New York: Simon & Schuster, 1995), 210-211.

⁶² Herbert F. York, *The Advisors: Oppenheimer, Teller, and the Superbomb* (San Francisco: W.H. Freeman, 1976), 36.

⁶³ *Foreign Relations of the United States, 1949*, Vol. I, 514-516.

⁶⁴ Kenneth W. Condit, *History of the Joint Chiefs of Staff: The Joint Chiefs of Staff and National Policy, Volume II, 1947-1949* (Washington, DC: Office of Joint History, Office of the Chairman of the Joint Chiefs of Staff, 1996), 280; Warner R. Schilling, "The H-Bomb Decision: How to Decide Without Actually Choosing," *Political Science Quarterly* 76, no. 1 (March 1961), 24, accessed 25 September 2014, <http://www.jstor.org/stable/2145969>.

Committee analysis in effect at the time of the Soviet explosion was approved in 1948 and estimated “[t]he earliest date by which the Soviets may have exploded their first test bomb is mid-1950. The probable date by which the Soviets will have exploded their first test bomb is mid-1953.”⁶⁵ As of early September 1949 that assessment was not in doubt. At the time the Soviet explosion was detected the Joint Strategic Plans Committee was working on the emergency war plan Offtackle. The early September draft stated “[i]ntelligence estimates indicate that the USSR will have no atomic bombs available in fiscal year 1950.”⁶⁶ President Truman noted in his *Memoirs* that intelligence estimates did not project a Soviet bomb prior to 1952 (and perhaps less accurately asserted that the surprise of the Soviet explosion did not generate a need for any emergency decisions).⁶⁷ As the official history of the Joint Chiefs of Staff noted, “what took them by surprise was that the explosion came nearly a year earlier than *any* [emphasis added] US intelligence estimate had forecast. The United States had been caught off guard and its leaders now faced the difficult question of how to respond.”⁶⁸

US Response: The H-bomb?

Despite President Truman’s assertion that emergency decisions were unnecessary, it is clear that official Washington felt a need to address the perceived Soviet aggression demonstrated by development of an atomic bomb and the concomitant loss of the US atomic monopoly. Policy makers could not avoid a new reality: the one tool the United States had come to rely upon to thwart Soviet military aggression in Europe would soon be as great a threat as it had been a

⁶⁵ Kenneth W. Condit, *History of the Joint Chiefs of Staff: The Joint Chiefs of Staff and National Policy, Volume II, 1947-1949* (Washington, DC: Office of Joint History, Office of the Chairman of the Joint Chiefs of Staff, 1996), 280-281.

⁶⁶ *Ibid.*, 283.

⁶⁷ Harry S. Truman, *Memoirs, Vol. II* (Garden City, NY: Doubleday, 1956), 306.

⁶⁸ Steven L. Rearden, *The Formative Years, 1947-1950* (Washington, DC: Historical Office, Office of the Secretary of Defense, 1984), 447.

deterrent. AEC Commissioner Gordon Dean was obviously aware of the pressure to respond when he told the AEC staff to prepare a report for the President on new measures that could be taken because the JCAE would expect the AEC to respond with specific proposals just a few hours after President Truman announced the Soviet achievement.⁶⁹ The proposals the AEC offered primarily concerned accelerating production of atomic weapons, but within weeks the secret debate over how to respond came to revolve around a single fundamental question: should the United States adopt a “crash” program to develop a thermonuclear bomb?

There were relatively few participants in the debate over the far-reaching decision. The primary parties involved were the Congressional Joint Committee on Atomic Energy, the Secretary of Defense and Joint Chiefs of Staff, the Secretary of State, the AEC Commissioners, the General Advisory Committee to the AEC, the Executive Secretary of the National Security Council, and a handful of otherwise unaffiliated scientists. York, who was intimately involved in the nuclear program during the period in question, estimated the number of participants involved at less than 100.⁷⁰ Each of them played significant roles, individually or in informal coalitions. The remainder of this paper examines those roles, the interaction between the key participants during the deliberative process, and the formal and informal advice they provided to President Truman. Ultimately, that input provides much of the explanation for why Truman made the decision he did.

Before discussing the debate itself we must briefly examine some of the different organizations involved, for their characteristics reveal a great deal about why the discussion developed as it did. Those that are of particular interest are the AEC, GAC, and JCAE, none of

⁶⁹ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 369, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

⁷⁰ Herbert F. York, *The Advisors: Oppenheimer, Teller, and the Superbomb* (San Francisco: W.H. Freeman, 1976), 45-46.

which exist anymore, at least not in the same forms as in 1949.⁷¹ The Atomic Energy Act of 1946 established the AEC and three major committees: the Congressional Joint Committee on Atomic Energy, the General Advisory Committee, and the Military Liaison Committee. The AEC had an odd structure that proved significant in how it interacted in the Washington political establishment. Namely, it was never clear whether it was intended to answer to the executive or legislative branch. It served primarily to operate the nation's nuclear enterprise, and operational agencies are traditionally controlled by a department secretary or administrator answering to the President. However, Congress established the AEC as a commission, a structure Green and Rosenthal noted is more typical of regulatory bodies serving “quasi-legislative” or “quasi-judicial” functions and requiring “more balanced judgment” or “greater insulation from presidential control.”⁷² As a result, the AEC effectively answered to two masters: the White House and the JCAE. A second critical effect of establishing the AEC as a commission without a single executive was that its influence in any debate where its position was not unanimous was severely diminished because each Commissioner was independent and could provide a dissenting opinion to the AEC's overseers if he wished.

The Atomic Energy Act established the GAC because the AEC Commissioners were laymen rather than scientists. The GAC was composed of notable scientists to advise the Commissioners on scientific and technical matters. All of the early members of the GAC were celebrated scientists who had served in leadership positions on the Manhattan Project and subsequently moved on to roles of significant influence in science or academia. The GAC members served part time, meeting a few times a year, for both the practical reason that a full

⁷¹ In 1974 Congress split the AEC into the Energy Research and Development Administration and the Nuclear Regulatory Commission.

⁷² Harold P. Green and Alan Rosenthal, *Government of the Atom: The Integration of Powers* (New York: Atherton Press, 1963), 76, accessed 9 January 2015, <http://hdl.handle.net/2027/mdp.39015078146514>.

time body was not needed and because its members all had other demanding jobs. Its first chairman was J. Robert Oppenheimer, the best known scientist in the United States after his role leading the atomic bomb development effort at Los Alamos during World War II. Because of the remarkable credentials and experience of the early GAC members, it has been argued that the GAC was actually more influential than the AEC which it was set up to advise. However, the debate that unfolded over thermonuclear development proved that neither a unanimous GAC, nor the majority of a divided AEC wielded enough influence to overcome the new weapon's determined advocates.

The JCAE was also an unusual organization. It was the only Congressional committee established by legislation, created by the Atomic Energy Act of 1946. It was vested with both oversight and legislative roles. By law the JCAE had a nearly even bipartisan makeup (no more than five of nine members from each house could be from one party), adding to its authority to speak with a bipartisan voice. Until the mid-1950s the JCAE had almost exclusive access to information on the nation's atomic energy program, sharing little with the rest of Congress. Between 1947 and 1951 the JCAE held seventy-five percent of its hearings in closed or executive session, and produced virtually no unclassified substantive reports of its activities before 1954.⁷³ As a result, the JCAE exerted tremendous influence on the rest of Congress, which by necessity relied heavily on the JCAE's judgment and guidance.⁷⁴ One historical study noted that the JCAE was "probably the most powerful Congressional committee in the history of the nation."⁷⁵

⁷³ The collected transcripts and records for the first seven years of JCAE open sessions contain less than twenty documents, of which a number are perfunctory and contain little substance.

⁷⁴ Stephen I. Schwartz, "Congressional Oversight of U.S. Nuclear Weapons," National Threat Institute, accessed 31 December 2014, <http://www.nti.org/analysis/articles/congressional-oversight-nuclear-weapons/>.

⁷⁵ Harold P. Green and Alan Rosenthal, *Government of the Atom: The Integration of Powers* (New York: Atherton Press, 1963), 266.

In addition to its monopoly on atomic information within the legislative branch, the JCAE exerted significant and arguably unprecedented influence in executive decision-making. A different study of the nuclear policy-making process argued that ambiguity in the status of the AEC as an independent commission or executive agency left room for the JCAE to assert unusual authority, making it “a natural battle-ground for...legislative-executive struggle.” That authority, uncontested by the Executive branch, allowed “a ‘halo of righteousness’ [to] surround the Congressional Joint Committee in its exercise of quasi-executive powers.”⁷⁶

The establishing legislation required the AEC to “keep the joint committee fully and currently informed with respect to the Commission’s activities” and authorized the JCAE to hire its own staff.⁷⁷ JCAE members and staff maintained close relationships with AEC staff and frequently visited AEC facilities, resulting in the JCAE sometimes knowing more about AEC operations than did the AEC Commissioners.⁷⁸ Green and Rosenthal noted that the JCAE’s access and insistence on receiving information on pending matters gave it significant opportunity to participate in the executive functions of policy formulation and program implementation. The JCAE did not hesitate “to make recommendations to the Executive and to apply pressure for their adoption.” In fact, Green and Rosenthal argued that the JCAE exerted its influence primarily through ongoing participation in Executive branch deliberations rather than through legislation and that it often acted “within the executive framework on decisions of national policy...in a

⁷⁶ Harold L. Nieburg, *Nuclear Secrecy and Foreign Policy* (Washington, DC: Public Affairs Press, 1964), 35.

⁷⁷ *Atomic Energy Act of 1946*, Public Law 585, *US Statutes at Large* 60 (1946): 772.

⁷⁸ Stephen I. Schwartz, “Congressional Oversight of U.S. Nuclear Weapons,” National Threat Institute, accessed 31 December 2014, <http://www.nti.org/analysis/articles/congressional-oversight-nuclear-weapons/>.

manner analogous to that of...the president himself.”⁷⁹ That influence would be put to an early test as the JCAE pushed for an aggressive thermonuclear weapons program.

The discussion about the correct policy response started almost immediately after the announcement of the Soviet explosion, with each of the significant parties except the Secretary of State staking out an early position. On 28 September 1949 Senator McMahon sent a letter to President Truman informing him of a letter McMahon sent to the Secretary of Defense and AEC in July 1949 urging that atomic energy production be increased. McMahon stated that the purpose of his letter to the President was to ascertain whether the administration would be submitting a supplemental budget request.⁸⁰ While the letter did not directly address President Truman’s announcement of a few days earlier, its timing sent an unmistakable message to the White House that the JCAE believed a response was necessary and intended to play an active role in deciding it.

Meanwhile, in response to Commissioner Dean’s direction the afternoon of President Truman’s 23 September announcement, on Monday, 26 September, the AEC division directors met to discuss the implications of the Soviet explosion for their different programs. They generated proposals to increase production of both nuclear and non-nuclear components, and accelerate construction of new facilities. That information was added to the draft report prepared for President Truman by the existing Special Committee of the National Security Council (NSC).⁸¹ Lilienthal was disappointed that the Special Committee’s report was composed of

⁷⁹ Harold P. Green and Alan Rosenthal, *Government of the Atom: The Integration of Powers* (New York: Atherton Press, 1963), 267-268.

⁸⁰ *Foreign Relations of the United States, 1949*, Vol. I, 543-544.

⁸¹ On 26 July 1949 President Truman designated the Secretaries of Defense and State and the Chairman of the AEC as a Special Committee of the National Security Council to examine the need to expand the existing atomic weapons program. See *Foreign Relations of the United States, 1949*, Vol. I, 501-502, and Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 183.

separate narrow judgments of the various participants rather than a broad interagency policy review, but he readily added the AEC staff's input to the report. (The bifurcated report was necessitated by Louis Johnson's refusal to allow AEC or Department of State participation in discussions of military planning, just as Johnson objected to a proposal for the Department of Defense ("the consumer") to certify the need for AEC ("the producer") facilities.⁸² Johnson's reticence about collaborating within the interagency committee format would arise again as a significant issue in the thermonuclear debate.)

On 28-29 September the JCAE held hearings on the appropriate US response to the Soviet explosion. Lilienthal's goal was to "present a balanced response to the Russian accomplishment."⁸³ The AEC agreed that atomic weapons production should be prioritized and sped up, and it requested that Congress remove riders that it contended were unnecessarily slowing the construction of new facilities. McMahon and the other JCAE members were unimpressed with the AEC's proposals and McMahon proceeded to read into the record a report prepared over the summer by William Borden, the JCAE staff director. That report began with the assumption that nuclear weapons were the nation's first line of defense, a legitimate proposition given that the defense budget limits imposed by President Truman in 1948 for Fiscal Year 1950 virtually eliminated any credible conventional capability to prevent the Soviet army from overrunning Western Europe.⁸⁴ Reliance on atomic weapons combined with the recent

⁸² Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 369-370, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>; Steven L. Rearden, *The Formative Years, 1947-1950* (Washington, DC: Historical Office, Office of the Secretary of Defense, 1984), 442-444.

⁸³ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 370, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

⁸⁴ David Alan Rosenberg, "American Atomic Strategy and the Hydrogen Bomb Decision," *Journal of American History* 66, no. 1 (June 1979): 69.

Soviet explosion made the report's conclusions self-evident to the JCAE: (1) the current atomic stockpile was inadequate, (2) production plans were not based on the Soviets already having atomic weapons of their own, (3) the US was expending too few resources to improve its military position, and (4) a concerted effort to develop the thermonuclear bomb was needed.

The AEC staff provided the JCAE with updated production plans based on their internal discussion from a few days prior. Regarding thermonuclear weapon development the AEC staff described its plans for testing the principles of fusion. Brigadier General James McCormack, Director of Military Applications at the AEC, noted that the thermonuclear development effort would be a major project over a number of years and that the technical feasibility of such a weapon was still unknown. However, he suggested that construction of reactors that would produce more free neutrons, necessary to produce the hydrogen isotopes that might be used in a fusion reaction, could begin immediately rather than waiting for answers to the theoretical questions that still hung over the project.⁸⁵

The same afternoon all the AEC Commissioners except Lilienthal met to discuss the appropriate response to the Soviet explosion. The question was whether the increased atomic production plans were adequate or if something more was needed. Lewis Strauss thought the thermonuclear weapon might be an appropriate answer and the discussion helped to clarify his thoughts. On 5 October Strauss sent the other Commissioners a memo arguing that the AEC should accelerate work on thermonuclear weapons because simply expanding the production of fission weapons was "not enough." He argued that "the time has now come for a quantum jump...we should now make an intensive effort to get ahead with the Super. By intensive effort I am thinking of a commitment in talent and money comparable, if necessary, to that which

⁸⁵ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 372.

produced the first atomic weapon. That is the way to stay ahead.” Strauss knew that his opinion was not shared by the majority of his fellow Commissioners, but he concluded with a recommendation “that we immediately consult with the General Advisory Committee to ascertain their views as to how we can proceed with expedition.”⁸⁶

The same day Strauss met Sidney Souers for lunch. As Executive Secretary of the two year old National Security Council, Souers saw President Truman regularly regarding national security and intelligence matters.⁸⁷ Strauss told Souers about the possibility of thermonuclear weapons and the Commission’s skeptical response, and asked if the President was aware of the potential weapon. Souers advised he did not think so, but thought the President would be interested, and encouraged Strauss to send a report to the White House as quickly as possible.⁸⁸

At about the same time that Strauss was pushing his fellow Commissioners to support fusion weapons development several well-connected scientists had also concluded that the Soviet explosion was an ideal opportunity to lobby for more aggressive work on their weapon of choice.⁸⁹ On 8 October Ernest Lawrence, Luis Alvarez, and Wendell Latimer, all prominent scientists at University of California at Berkeley, arrived in Washington, DC after a stop at Los Alamos the day before to consult with Teller. Lawrence was head of the University of California

⁸⁶ Lewis L. Strauss, *Men and Decisions* (Garden City, NY: Doubleday, 1962), 216-217; Steven L. Rearden, *The Formative Years, 1947-1950* (Washington, DC: Historical Office, Office of the Secretary of Defense, 1984), 448.

⁸⁷ McGeorge Bundy, *Danger and Survival* (New York: Random House, 1988), 204-205.

⁸⁸ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 374-375, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>; Sara L. Sale, *The Shaping of Containment: Harry S. Truman, the National Security Council, and the Cold War* (Saint James, NY: Brandywine Press, 1998), 122.

⁸⁹ As noted previously, Teller in particular was an early and ardent proponent of the Super, consistently urging work on such a device from the early 1940s through the Soviet test and subsequent US decision. His Manhattan Project experience and long promotion of fusion weapons gave him excellent political contacts that he put to good use when the Soviet atomic explosion made the climate more favorable in late 1949.

Radiation Laboratory and believed scientists should develop all possible scientific knowledge while decisions on the use of that knowledge should be left to politicians. Alvarez was Lawrence's protégé and had significant accomplishments of his own that had increased his profile in Washington. Latimer was a celebrated chemist and department dean. Teller, Lawrence and Alvarez were not the only scientists advocating development of the thermonuclear bomb, but York asserted that they had the best access to politicians and policy makers.⁹⁰

In a 21 October letter to fellow GAC member James Conant, Oppenheimer discussed at some length the influence he believed the scientists were exerting. He stated in part, "two experienced promoters have been at work, i.e., Ernest Lawrence and Edward Teller. The project has long been dear to Teller's heart; and Ernest has convinced himself that...the Russians will soon do the super, and that we had better beat them to it... Ernest spoke to [Senator and JCAE member William] Knowland and McMahon, and to some at least of the Joint Chiefs." Oppenheimer continued in the letter to contend that Lawrence and Teller's involvement was responsible for the JCAE's and Joint Chiefs' interest in supporting development, as well as for changing "[t]he climate of opinion among other respected scientists."⁹¹ While Oppenheimer may have overstated the influence of the pro-Super scientists, they undoubtedly played a significant role in dampening the influence of the GAC scientists by advocating for the new weapon with policy and offering a credible alternative assessment of its prospects and value. Interestingly, York pointed out that Lilienthal later made no mention of Teller's involvement in the debate,

⁹⁰ Herbert F. York, *The Advisors: Oppenheimer, Teller, and the Superbomb* (San Francisco: W.H. Freeman, 1976), 62.

⁹¹ *In the Matter of J. Robert Oppenheimer*, Vol. V, Transcript of hearing before the Personnel Security Board (Washington, DC: US Atomic Energy Commission, April 16, 1954), 784-785, accessed 4 February 2015, <http://www.osti.gov/includes/opennet/includes/Oppenheimer%20hearings/Vol%20V%20Oppenheimer.pdf>.

focusing exclusively on Lawrence and Alvarez as the leaders of the scientific push for development.⁹²

Over the course of their few days in Washington Lawrence, Alvarez and Latimer met with senior AEC staff, all five AEC Commissioners, Robert LeBaron, the civilian chairman of the Military Liaison Committee, and Senator McMahon and Congressman Carl Hinshaw, both members of the JCAE. They also visited Isidor Rabi in New York, before Lawrence returned to Washington to seek support from the Joint Chiefs of Staff. They pitched their proposal to dramatically accelerate thermonuclear development work, arguing that it was probable that a thermonuclear device could be built and that failure to make development a high priority program would likely result in the disastrous result of the Soviets building one before the United States. Latimer later stated, “I talked to everybody I could... I tried to build up pressure for it [the H-bomb]. I definitely tried to build up pressure for it.”⁹³ Alvarez, who kept a diary of his involvement in the debate, noted that the responses they received in Washington were almost universally supportive, with the exception of their meeting with Lilienthal, who expressed revulsion at the idea of building such a powerful weapon and did not want to even discuss it.⁹⁴

Further evidence of the JCAE’s active role came soon after when McMahon appointed a JCAE subcommittee on the Super and sent it on a fact-finding tour to AEC facilities across the country. These visits were within the scope of authority the JCAE had carved out for itself, but demonstrate the unusual relationship the JCAE members and staff had with the AEC and nuclear

⁹² Herbert F. York, *The Advisors: Oppenheimer, Teller, and the Superbomb* (San Francisco: W.H. Freeman, 1976), 65.

⁹³ *In the Matter of J. Robert Oppenheimer*, Vol. XII, Transcript of hearing before the Personnel Security Board (Washington, DC: US Atomic Energy Commission, April 27, 1954), 2283-2284, accessed 4 February 2015, <http://www.osti.gov/includes/opennet/includes/Oppenheimer%20hearings/Vol%20XII%20Oppenheimer.pdf>.

⁹⁴ Stanley A. Blumberg and Gwinn Owens, *Energy and Conflict: The Life and Times of Edward Teller* (New York: G.P. Putnam’s Sons, 1976), 204.

enterprise. The subcommittee first went to Los Alamos, where it met with Bradbury, the lab Director, as well as the lab's Associate Director, and the AEC's area manager, area coordinator, and Deputy General Counsel. The JCAE members were briefed on the state of the fission weapons program, plans for upcoming test series, and the design of "boosted" fission bombs. Bradbury also discussed the lab's latest plan for developing the H-bomb, culminating with a functional weapon by mid-1952 if testing of the boosted fission design proved successful and an adequate quantity of tritium was available.

The JCAE group then traveled on to Berkeley for unofficial meetings with a number of scientists including Lawrence. Lawrence lobbied hard for the necessity of developing the Super, and specifically for several options for new facilities that could produce a significant quantity of tritium. Kenneth McMillan, one of the other scientists in the meeting, argued for "a production pile in every backyard," which prompted Walter Hamilton, one of the JCAE members, to notate that the 28 October meeting was "[a] cross between hysteria and a tremendous enthusiasm."⁹⁵ The timing and topics of the visits added significantly to the voice of AEC staff and outside scientists who under more typical circumstances would not have such influence. It is clear that the JCAE was willing and able to use its authority to seek out and consider opinions other than those of the official commission executives who would more commonly provide a more controlled and unanimous message.

Meanwhile, the AEC Commissioners had quickly agreed to Strauss's recommendation to refer the question of thermonuclear development to the GAC. However, the directions to the advisory committee were not narrowly confined to Strauss's suggestion about "how to proceed with expedition." Instead, the AEC directed the GAC to address "whether the Commission is now

⁹⁵ Ann Fitzpatrick, "Igniting the Light Elements: The Los Alamos Thermonuclear Weapon Project, 1942-1952" (PhD diss., Virginia Polytechnic Institute, 1999), 207-210, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/10596>.

doing things which might well be curtailed or stopped, and also what further things we ought to do to serve the paramount objective of the common defense and security.”⁹⁶ Oppenheimer, in a lengthy 1954 letter published in the *Bulletin of Atomic Scientists*, recalled that the AEC asked the GAC to provide advice on two questions. First, whether the AEC’s current programs were adequate in light of the Soviet test, or whether they should be adjusted or increased. Second, whether a “crash program” to develop the hydrogen bomb should be part of any new program.⁹⁷

The GAC’s status as a part-time responsibility for its members forced it to schedule a weekend in late October to address the questions with which it had been tasked. Even with that delay a travel conflict prevented Glenn Seaborg from participating. After talking with an array of powerful leaders for a day and a half, including Kennan from the Department of State, the head of AEC intelligence, Chairman of the Joint Chiefs of Staff Omar Bradley, Chairman of the MLC Robert LeBaron, the AEC Commissioners, and the chairman of the military’s Weapons Systems Evaluation Group, all the GAC members strongly opposed rapid development of thermonuclear weapons.⁹⁸

The GAC issued a two part report back to the AEC. The first part addressed the scale of production for fissionable material, development of tactical nuclear weapons, and increasing neutron production. The second part addressed high priority development of “super bombs.” It

⁹⁶ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 380, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

⁹⁷ J. Robert Oppenheimer, “Oppenheimer Replies,” *Bulletin of Atomic Scientists* 10, no. 5 (May 1954): 186, accessed 8 February 2015, <http://content.ebscohost.com.lumen.cgsccarl.com/ContentServer.asp?T=P&P=AN&K=21307320&S=R&D=a9h&EbscoContent=dGJyMNHr7ESeprY4xNvgOLCmr02ep7JSsay4SbSWxWXS&ContentCustomer=dGJyMPGot1CxrLFJuePfgeyx44Dt6fIA>. This open letter was Oppenheimer’s response to General Kenneth D. Nichols’ 23 December 1953 letter initiating the AEC review of Oppenheimer’s security clearance.

⁹⁸ Glenn Seaborg was in Europe at the time of the meeting. He expressed some initial thoughts on the matter in a letter to Oppenheimer, but was not present.

concluded that no member of the committee was willing to endorse high priority development, and broke the objections into two areas. The first were technical: limited availability of tritium, great uncertainty about technical viability. Regarding the technical hurdles, the report stated,

It is notable that there appears to be no experimental approach short of actual test which will substantially add to our conviction that a given model will or will not work...Thus we are faced with a development which cannot be carried to the point of conviction without the actual construction and demonstration of the essential elements of the weapon in question...This does not mean that further theoretical studies would be without avail. It does mean that they could not be decisive. A final point that needs to be stressed is that many tests may be required before a workable model has been evolved or before it has been established beyond reasonable doubt that no such model can be evolved...we believe that an imaginative and concerted attack on the problem has a better than even chance of producing the weapon within five years.

The second area the GAC addressed was the moral and policy consequences of development. It noted that

once the problem of initiation has been solved, there is no limit to the explosive power of the bomb itself except that imposed by the requirements of delivery...It is clear that the use of this weapon would bring about the destruction of innumerable human lives; it is not a weapon which can be used exclusively for...military or semi-military purposes. Its use therefore carries much further than the atomic bomb itself the policy of exterminating civilian populations.

The GAC was not unanimous in its specific recommendations, but it was on the major points: a desire to avoid development of the weapon, reluctance to see the United States initiate such development, and that an all-out development effort would be wrong at that time. Two annexes were attached to the main report clarifying the arguments of the various members, which differed primarily on whether to forswear development unilaterally or only if the Soviet Union agreed to a mutual moratorium.

The wide scope of the AEC's directive gave the GAC latitude to venture well outside the confines of Strauss's 5 October proposal. It was also outside the scope of its role as defined by the Atomic Energy Act of 1946, which established it "to advise the Commission on scientific and

technical matters relating to materials, production, and research and development.”⁹⁹ As Anne Fitzpatrick noted, this was not the first time the GAC had advised against an immediate program on the Super based on technical grounds – it had also done so in June 1948.¹⁰⁰ However, the moral and policy concerns that undergirded the Committee’s October 1949 recommendation marked a significant deviation from its mandate to provide technical expertise. There was also a contradiction unnoticed at the time between existing AEC policy, which had proceeded with slow but methodical development toward the H-bomb since the end of World War II, and the latest GAC recommendations opposing development, indicating that moral concerns were ignored or deferred until the matter became imminent.¹⁰¹ While it is counterfactual, it is likely that the GAC’s opposition to a “crash course” development program would have carried far more weight with policy makers had its arguments remained focused on the technical uncertainty and resource allocation risks, as those assessments were clearly within the professional purview of the committee and its members. However, because the GAC moved the debate from whether to continue the slow and steady development plan or significantly accelerate the effort to one of either no development or rapid development, maintaining the status quo was replaced as a policy option by unilateral renunciation.

The AEC received the GAC’s report immediately and discussed it the following day with McMahon. McMahon was vehemently opposed to the GAC’s recommendations about the Super and Lilienthal was left with the impression that McMahon saw war with the USSR as inevitable and the Super as the United States’ only defense. McMahon advised the Commissioners that he was writing to President Truman to request an opportunity to be heard if Truman was inclined to

⁹⁹ *Atomic Energy Act of 1946*, Public Law 585, *US Statutes at Large* 60 (1946): 757.

¹⁰⁰ Ann Fitzpatrick, “Igniting the Light Elements: The Los Alamos Thermonuclear Weapon Project, 1942-1952” (PhD diss., Virginia Polytechnic Institute, 1999), 212, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/10596>.

¹⁰¹ For an in-depth examination of the inconsistency of scientist’s positions regarding thermonuclear weapon development see Peter Galison and Barton Bernstein, “In Any Light: Scientists and the Decision to Build the Superbomb, 1952-1954,” *Historical Studies in the Physical and Biological Sciences* 19, no. 2 (1989): 267-347.

accept the GAC's recommendation.¹⁰² Two days later Teller arrived in Washington to meet with McMahon. At their meeting McMahon said the GAC report "made him sick." A few days later McMahon left Washington to visit the AEC's western facilities on his own fact-finding tour.¹⁰³

The same week the AEC Commissioners were wrestling with the GAC report. After two days of meetings they were firmly divided, with Dean joining Strauss in advocating development while Pike and Smyth joined Lilienthal in general opposition. The Commissioners decided to meet with as many of the GAC members as were available the following Monday to see if they could reach consensus. The meeting disappointed both sides and got them no closer to agreement. Lilienthal, in a hurry to get a recommendation to the President before pressure from the scientists and JCAE constrained his options, drafted a report with split recommendations. It laid out a number of technical points that both sides agreed on including: that there was a better than even chance the Super could be developed but it would take a minimum of three years; that it would have unlimited power; that the general principles of the reaction were well known to the Russians; to match a concerted Soviet effort would require immediate and vigorous action; that action would disrupt existing projects and it could not be kept secret. The report advised of the differences among the Commissioners, and attached the GAC report as well as individual views from the three Commissioners who were in Washington at the time. Lilienthal delivered the report to President Truman on 9 November.¹⁰⁴

Strauss, who was in Los Angeles when the AEC report was finalized, was working on a letter to President Truman to articulate his views when he was visited by McMahon at the start of the Senator's AEC facility visits. McMahon described his plans for pushing the Super project

¹⁰² Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 385-386.

¹⁰³ *Ibid.*, 388.

¹⁰⁴ *Foreign Relations of the United States, 1949*, Vol. I, 576-585.

forward through the JCAE and both men ended the meeting encouraged about the prospects for success. Strauss, buoyed by the encouragement, wrote a strong letter to Truman arguing that “the United States must be as completely armed as any possible enemy” and decrying as “unwise” plans to “renounce unilaterally any weapon which an enemy can reasonably be expected to possess.” Strauss appended a concise and persuasive memorandum outlining his logic, including the probable feasibility of developing thermonuclear weapons, Russia’s evident technical competence, the unlikely prospects of “a government of atheists” being “dissuaded...on ‘moral’ grounds,” and the possibility that Russia could already be well ahead of the United States in thermonuclear development. Finally, he pointed out some of the same inconsistencies in the GAC members’ views discussed earlier, particularly that some of the same scientists advocated working on fusion weapons as part of a 1946 nuclear power panel.¹⁰⁵

It is instructive to note the concern expressed by the AEC over the pressure exerted on President Truman. The second section of the report was headed “Why is there a necessity for an early decision of policy by the President?” In it the Commissioners explain that “The Joint Committee on Atomic Energy is preparing to take early action on the question of proceeding with this development. A sub-committee on this subject has just visited Commission installations at Berkeley and Los Alamos. They came away with enthusiasm for an immediate program, at highest priority. Several scientists have become missionaries for the project.” They continued a paragraph later: “[w]e are concerned that without...a statement from you, at an early date, there *will* be public discussion, but it may be based largely on irresponsible conjecture, ‘leaks’, politically motivated or inflammatory utterances, and the like. Only confusion, and worse, will be the result.”¹⁰⁶ From these statements, agreed to by all five Commissioners, it is apparent that the

¹⁰⁵ Ibid., 596-599.

¹⁰⁶ Ibid., 577-578.

AEC already perceived that the President's options were severely constrained and that a delay in the White House assuming active control of the debate would be costly. Rhodes noted that in retrospect what President Truman learned from the fall debate was the political urgency of announcing a decision, not new information to shape the decision, since Truman had probably already made his choice.¹⁰⁷

However, President Truman's response to the AEC's report was neither public nor did it explicitly assert executive authority to decide the matter. Instead, on 18 November 1949 he appointed a Special Committee of the National Security Council to advise him. The committee was composed of Lilienthal, Acheson, and Johnson, and staffed by officers from each department to conduct necessary studies. President Truman directed the committee to "analyze all phases of the question, including particularly the technical, military and political factors, and make recommendations as to whether and in what manner the United States should undertake the development and possible production of 'super' atomic weapons." He also requested the committee's advice on "whether and when any publicity should be given to the matter." In the meantime he directed the discussion be conducted in secret with as little publicity as possible.¹⁰⁸

However, in the days after President Truman appointed the Special Committee additional pressure started to pile up on the White House. On 1 November, Senator Edwin Johnson from Colorado, a member of the JCAE, mentioned the Super on television while condemning scientists for security leaks. That mistake apparently went unnoticed until the *Washington Post* ran a feature article about the subject the same day Truman established the Special Committee,

¹⁰⁷ Richard Rhodes, *Dark Sun: The Making of the Hydrogen Bomb* (New York: Simon & Schuster, 1995), 407.

¹⁰⁸ *Ibid.*, 587-588. While the composition of this Special Committee was identical to that previously established by Truman on 26 July 1949, the record is clear that the two committees were separately established, each with a specific task.

threatening to spill the debate into the public domain.¹⁰⁹ Three days later McMahon sent a long and very detailed refutation of the GAC's position to President Truman. In it he attacked the foundations on which the GAC built its opposition, addressing in excruciating detail the GAC arguments about the immorality of the Super, its lack of military value, and the suggestion that an agreement with the USSR could prevent development. In case the President had any doubt about McMahon's position, it was clarified when McMahon stated, "any other decision would almost guarantee disaster for our nation...if we let Russia get the Super first, catastrophe becomes all but certain – whereas, if get it first, there exists a chance of saving ourselves."¹¹⁰

McMahon's letter, running seven single spaced pages, served as a reasonable proxy for both the JCAE's position and level of interest, as well as the *de facto* position of the whole Congress. Records indicate that McMahon, serving as Chairman of the JCAE, was the only legislator directly engaged with the White House on the topic of thermonuclear weapons. Thus, in a situation very unusual for the legislative branch, its arguments came from a single unified position. Moreover, the arguments McMahon advanced were well-synchronized with Strauss's letter, which reached President Truman on 25 November, and would soon be found consistent with those of Johnson and the Joint Chiefs. Thus, President Truman was presented with intense advocacy in favor of development from an AEC Commissioner, Congress, and the National Military Establishment in less than a one week span.

Meanwhile, in response to the AEC majority's adverse recommendation the Joint Chiefs began a closer examination of the subject. After reviewing a report prepared by the MLC the Joint Chiefs of Staff sent Johnson a memorandum on 23 November outlining the military service

¹⁰⁹ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 394, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

¹¹⁰ *Foreign Relations of the United States, 1949*, Vol. I, 588-595.

chiefs' stand.¹¹¹ The Joint Chiefs voiced strong support in favor of development. They argued that “[p]ossession of a thermonuclear weapon by the USSR without such possession by the United States would be intolerable” and the “necessity of determining the feasibility of a thermonuclear explosion and its characteristics” were “essential for US defense planning.” They noted the significance of development on international affairs, but did not address what those effects might be. Perhaps most important to its argument was the exceedingly practical tone it offered, concluding that the considerations in favor of development “decisively outweigh the possible social, psychological and moral objections” of arguments against development.¹¹²

On 2-3 December the GAC met for a regularly scheduled meeting in Washington. The primary topic it addressed was the continuing thermonuclear debate. It reviewed and generally reaffirmed its October recommendations in a new report, as well as adding attachments from individual members specifically addressing the false sense of security possession of the Super would engender and the minimal military, diplomatic and psychological value of the new weapon. No member wanted to change his overall rejection of the Super established at the October meeting.¹¹³

The Special Committee met for the first time on 22 December 1949, several weeks after the first working group meetings. Lilienthal and the AEC working group staff were already frustrated that the Department of Defense was demanding information focused on “the narrow technical grounds of whether building the H-bomb was feasible” without addressing the larger

¹¹¹ Kenneth W. Condit, *The Joint Chiefs of Staff and National Policy, 1947-1949* (Washington, DC: Office of Joint History, Office of the Chairman of the Joint Chiefs of Staff, 1996), 291.

¹¹² *Foreign Relations of the United States, 1949*, Vol. I, 595-596.

¹¹³ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 395-396; Kenneth W. Condit, *The Joint Chiefs of Staff and National Policy, 1947-1949* (Washington, DC: Office of Joint History, Office of the Chairman of the Joint Chiefs of Staff, 1996), 294-295.

strategic policy questions the Commissioners and GAC had raised.¹¹⁴ Consistent with the principles outlined for atomic weapons by NSC-30 in 1948, Johnson and Chairman of the Joint Chiefs Omar Bradley argued that only a firm and verifiable agreement for international control could alleviate the military's need to develop thermonuclear weapons. Lilienthal insisted on addressing the question primarily on moral grounds.¹¹⁵ The gulf between them was wide and neither was willing to compromise, resulting in an impasse.

By the time Truman appointed the Special Committee both Lilienthal and Johnson had established firm positions. Acheson, on the other hand, was inclined to favor development, but had not made up his mind yet. In his own account he noted that in early discussions he never fully comprehended the logic of the moral argument against development, belying his initial thoughts on the matter. He also stated that both President Truman and he felt pressure to announce a decision due to strong press and Congressional interest, implying that those pressures had grown to have significant influence by the end of the process.¹¹⁶ Gordon Arneson, Special Assistant to the Undersecretary of State for Atomic Energy Affairs in 1949 and early 1950, noted that “[Acheson] was a realist. His experience on the Hill had taught him to give full weight to public opinion as reflected by the Congress. His sense of realism prompted him to conclude that...the

¹¹⁴ Steven L. Rearden, *The Formative Years, 1947-1950* (Washington, DC: Historical Office, Office of the Secretary of Defense, 1984), 450; Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 395, Accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

¹¹⁵ Kenneth W. Condit, *The Joint Chiefs of Staff and National Policy, 1947-1949* (Washington, DC: Office of Joint History, Office of the Chairman of the Joint Chiefs of Staff, 1996), 293-294; Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 397-399, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

¹¹⁶ Dean Acheson, *Present at the Creation: My Years in the State Department* (New York: W.W. Norton, 1969), 345-348.

Administration would run into a Congressional buzz saw and the proposal [to unilaterally foreswear thermonuclear development as an example to the USSR] would be stillborn.”¹¹⁷

Bernstein made a persuasive argument that the Special Committee’s recommendation was predictable given its participants. Acheson was being blamed for the fall of China to the communists, which became official on 1 October 1949, and neither he nor Truman could afford the political battle that would inevitably come from intentionally weakening the United States’ strategic position by not pursuing the Super. Bernstein concluded Acheson approached the question honestly and did not just ritually go through the decision process “to reach a predetermined recommendation,” but that his “conclusion was predestined” by his own predilections and the political climate.¹¹⁸ Rhodes advanced a similar, if less developed, argument that “domestic politics strongly influenced Acheson’s recommendations,” based heavily on Arneson’s account.¹¹⁹

On 14 December MLC Chairman LeBaron sent the GAC’s latest report to the Joint Chiefs for its views since much of the GAC’s recent focus was on the military value of the Super. LeBaron desired to use the Joint Chiefs’ response in preparing Johnson’s position for the Special Committee.¹²⁰ The Joint Chiefs provided their response on 13 January. It maintained that, while there was not a need for a “crash course” development program, valid military reasons existed for developing the weapon. Presenting arguments in a logical, sequential manner, the paper

¹¹⁷ R. Gordon Arneson, “The H-bomb Decision,” *Foreign Service Journal* 46 (May 1969): 29.

¹¹⁸ Barton J. Bernstein, “Truman and the H-bomb,” *Bulletin of the Atomic Scientists* 40, no. 3 (March 1984): 16.

¹¹⁹ Richard Rhodes, *Dark Sun: The Making of the Hydrogen Bomb* (New York: Simon & Schuster, 1995), 405.

¹²⁰ Kenneth W. Condit, *The Joint Chiefs of Staff and National Policy, 1947-1949* (Washington, DC: Office of Joint History, Office of the Chairman of the Joint Chiefs of Staff, 1996), 295-297.

addressed military, diplomatic, psychological and moral value. The paper argued for deferral of a decision on production, but that feasibility should be thoroughly and expeditiously determined. On the moral question, the Joint Chiefs concluded that it was “folly to argue whether one weapon is more immoral than another” because “it is war that is immoral, and the stigma of such immorality must rest upon the nation which initiates hostilities.”¹²¹

While there is no evidence that the Joint Chiefs intended for their report to go the White House, Johnson grew impatient with trying to reach consensus and took the unilateral step of forwarding it to President Truman outside the NSC framework. Six days later Souers called Acheson to advise him and noted that the President thought the Joint Chiefs’ paper “made a lot of sense.”¹²² Acheson agreed with Souers that the Special Committee would recommend development, but noted that “we should be quite honest and say that in advising this action, we are going quite a long way to committing ourselves to continue down that road.” Finally, he urged that a full “straightforward and honest” NSC paper that laid out the entire matter openly be presented to the President rather than just the Committee’s conclusions.¹²³

Truman’s comment broke the impasse on the Special Committee and Lilienthal recognized he had lost the argument. Acheson, who had been shuttling back and forth between Johnson and Lilienthal in an effort to achieve consensus, directed R. Gordon Arneson, a member of his staff, to draft a paper that could serve as a draft report from the Special Committee. On 24 January he provided it to Johnson and Lilienthal for review in preparation for only the second full Special Committee meeting on 31 January.¹²⁴

¹²¹ *Foreign Relations of the United States, 1950*, Vol. I, 503-511.

¹²² Steven L. Rearden, *The Formative Years, 1947-1950* (Washington, DC: Historical Office, Office of the Secretary of Defense, 1984), 451-452.

¹²³ *Foreign Relations of the United States, 1950*, Vol. I, 511-512.

¹²⁴ Dean Acheson, *Present at the Creation: My Years in the State Department* (New

Meanwhile, the JCAE was back in Washington after a holiday break and ready to resume its push for the Super. On 10 January Borden called Dean, McMahon's one-time law partner, to update him on the JCAE executive session from the day before. McMahon had recounted the events of the past few months, then read into the record the GAC report along with the individual position documents. Following that he read his 21 November letter to the President, which drew approval from most of the members. The JCAE concluded it should hold hearings with the key agencies involved then send an official recommendation to the President. When Johnson heard about the JCAE's continued interest he asked LeBaron to share the substance of the nearly complete Joint Chiefs' paper with McMahon.

On 20 January General Bradley and LeBaron appeared before the JCAE to testify. After they briefed the committee, McMahon concluded that the committee was in enough agreement to send a recommendation to the President immediately, but decided not to do so because of the repercussions of only speaking with one side in the debate. Instead, he scheduled a hearing with the AEC for 27 January. Lilienthal, withdrawing from daily responsibilities as he anticipated his delayed retirement, and knowing by then the almost certain outcome, deferred most of the hearing testimony to others. Pressure from aggressive questioning led Commissioners Henry Smyth and Sumner Pike to decline stating current positions on development, a significant change from their previous opposition. The JCAE had effectively eliminated opposition from the AEC as a factor in the debate and decided to meet on 30 January to draft a recommendation to the President.¹²⁵

While it almost certainly occurred well after the decision to proceed, if any doubt remained the British government's disclosure on 27 January that Klaus Fuchs admitted having

York: W.W. Norton, 1969), 348; R. Gordon Arneson, "The H-bomb Decision," *Foreign Service Journal* 47 (June 1969), 25-26.

¹²⁵ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 401-405, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

served as a Soviet spy, for the past decade, much of that time inside the US nuclear weapons program, probably would have caused reconsideration. Instead, it simply served as more evidence for advocates of the Super that the USSR was aggressively pursuing its nuclear goals and very well could be further toward thermonuclear development than the United States. While it is beyond the scope of this paper, the Fuchs matter's influence on the rapid evolution of the US program from feasibility study to production program would be interesting.

As Hewlett and Duncan put it, by the NSC Special Committee's meeting on 31 January 1950, "[t]houghtful deliberation in the blinding glare of public opinion was now out of the question."¹²⁶ The recommendation for the President was already settled. Acheson, Johnson and Lilienthal, along with a few others, met for an obligatory discussion of the draft paper Acheson had provided. After a concession to Johnson eliminating a clause advising the President not to move forward with production until feasibility was determined all three men signed the recommendation. Johnson suggested using a previously scheduled meeting with the President to immediately present it to him. They immediately walked to the White House and presented their findings orally to President Truman. Acheson, who wanted to give Lilienthal an opportunity to plead his case one more time, encouraged Lilienthal to speak, but Truman quickly cut him off with a question: "Can the Russians do it?" All three agreed that they could. "In that case," Truman replied, "we have no choice. We'll go ahead."¹²⁷ In less than ten minutes the recommendation was offered and an official decision was made, which was issued in a low key press release later that afternoon.

The President's announcement was vague, committing only to continued development, but not the "crash course" that some had advocated, or production. Whether intentional or not, the

¹²⁶ Ibid., 406.

¹²⁷ Steven L. Rearden, *The Formative Years, 1947-1950* (Washington, DC: Historical Office, Office of the Secretary of Defense, 1984), 453.

blandness had little effect. The *New York Times* ran a large headline the following day announcing the President's commitment to the H-bomb.¹²⁸ Within two months Truman agreed to significantly bolster construction of facilities necessary for thermonuclear weapon production despite incomplete work on both feasibility testing and the ordered review of national security policy.

It is important to note that the official histories of both the AEC and Joint Chiefs allude to the pressure President Truman felt to proceed with thermonuclear development during his meeting with the Special Committee. Condit argued Truman felt "the pressure of public discussion made it impossible to put off a decision while the matter was studied at length in the Executive Branch."¹²⁹ Hewlett and Duncan recounted Truman's lament that he could not make "a quiet examination of the issues" because of Senator Johnson's "unfortunate statement" and obliquely stated that "[n]ow there was so much excitement over the issue that he had no choice but to go ahead."¹³⁰ Both authors point to the lack of options President Truman had left when he finally announced a decision.

Summary of the Participants' Positions

The scientists' involvement was quickly surpassed by others who had official roles in the decision, but they played a critical early role in informing potential sponsors and advocating for development. While it is hard to imagine today, independent scientists wielded tremendous

¹²⁸ McGeorge Bundy, *Danger and Survival: Choices About the Bomb in the First Fifty Years* (New York: Random House, 1988), 213.

¹²⁹ Kenneth W. Condit, *The Joint Chiefs of Staff and National Policy, 1947-1949* (Washington, DC: Office of Joint History, Office of the Chairman of the Joint Chiefs of Staff, 1996), 299.

¹³⁰ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 408, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

influence despite, or perhaps because of, their lack of an official role. That influence arose from several sources. First, they had reputations derived from high level work on the Manhattan Project, arguably the most successful large scale scientific effort in history until at least the Apollo space program. Americans, including policy-makers, remained fascinated by the almost mystical power of nuclear weapons. Second, the scientists remained prominent in the still new and secretive world of nuclear weapons development and cultivated political contacts to aid their scientific work. Third, because they were outside the Washington political establishment it seems that some saw their opinions as apolitical and unbiased. Finally, what the scientists were advocating resonated with their audience. The political climate and world events made an aggressive response the preferred action, and the proposal to expand the effort on a new “super weapon” met that desire well.

The AEC Commissioners split nearly evenly, with three members opposed to a crash program and two in favor. Lilienthal was the most adamantly opposed based on moral and policy concerns similar to those expressed by the GAC. Strauss was heavily in favor, arguing that it would be unacceptably dangerous to opt against building a super weapon that the Soviets would undoubtedly seek. The General Advisory Committee, on the other hand, took a unanimous stance in opposition to aggressive development of thermonuclear weapons. It offered both technical, moral and policy reasons for its position, but the moral argument was the overriding factor. All but two of the GAC members recommended against development regardless of what the USSR did, while two advocated seeking an agreement with the USSR to mutually abstain from development.

The JCAE and Department of Defense were strongly in favor of aggressive development, with Strauss’s logic the dominant theme. The military, while advocating development, provided a single military justification for the new weapon—that it might substitute for multiple fission bombs. In fact, the Chairman of the Joint Chiefs of Staff argued that the value of such a powerful

weapon was primarily psychological.¹³¹ The same logic that led to an unrestrained arms race pervaded the Joint Chiefs' strongest argument—that it would be unacceptable for an adversary to possess a weapon that the United States did not.

Did Truman Have a Choice...or Want One?

The historical context leading up to the decision on thermonuclear weapons development sheds a great deal of light on the reason for the majority view in favor of development. From the US perspective a picture emerges of an adversary in the Soviet Union that is bellicose and had been for much of its short existence. From the earliest days of communist ideology Karl Marx and Vladimir Lenin argued for a great and violent struggle between classes. The Bolshevik movement that led to the founding of the Soviet Union perceived itself as the vanguard of that struggle. As the Bolsheviks consolidated their power after World War I, the Soviet Union started expanding its geopolitical influence through Comintern support for communist movements in China, Spain and South America. However, the United States, with historical isolationist tendencies, protective geography, and the domestic problems of the Great Depression starting in 1929, paid little attention to the far distant behemoth. In addition, the United States did not view itself as a great power outside its regional sphere of influence before World War II. As a result of these factors, many Americans hoped for a return to cool but stable relations with the Soviet Union after the war. However, Soviet words and actions quickly led objective observers to a different conclusion. Stalin's 1946 speech seemingly foretold the inevitability of a violent struggle between communism and capitalism.

President Truman's closest advisors from 1946 through 1949 were consistent in their assessments that the Soviet Union expected eventual open conflict with the United States and

¹³¹ Steven L. Rearden, *The Formative Years, 1947-1950* (Washington, DC: Historical Office, Office of the Secretary of Defense, 1984), 449.

were preparing for it. Soviet words and actions consistently reinforced that view. Stalin's 1946 speech and US analysis of Soviet policy supported that conclusion. Finally, from Soviet intransigence in negotiations, its involvement in the Czechoslovakian coup and the blockade of Berlin in 1948 to its assistance to the communists in China, a common theme emerged: communism, led by the USSR, would expand when and where it could and conflict with western democracies was a likely, perhaps inevitable, result.

The attempt to make a high stakes decision in secret on the US response to Soviet atomic capability through a convoluted and drawn out process inevitably generated public interest. As discussed earlier, a bit of information made its way into the press in October and November 1949, and Truman tried to plug the leaks. However, by mid-January the leaks threatened to turn into a flood. Drew Pearson reported during a 15 January radio broadcast that the debate over building the Super engulfed official Washington, with some details of the positions of Lilienthal, Strauss, Johnson and Acheson. Two days later the *New York Times* ran a page one article discussing the Super debate and the potential for a last push toward international control before proceeding with development. Hewlett and Duncan argue that the growing pressure of these leaks meant whatever decision was to be made could not be delayed.¹³²

The conclusion is clear. In late 1949 the history of the past five years led the great majority of professional observers and laymen to the conclusion that the Soviet Union and its communist ideology was a menace without equal that would never stop in its pursuit of dominating the West. Knowledgeable and influential policy makers like George Kennan and Winston Churchill persuasively articulated their reasons for that assessment and if proof was desired it was easy to find. The worsening situation in the eastern Mediterranean in late 1947, the

¹³² Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 400-401, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

Czechoslovakian coup in early 1948, the blockade of Berlin later in 1948 through mid-1949, the Alger Hiss espionage conviction in early 1949, the testing of an atomic weapon in late summer 1949, the communist victory in China and the discovery of Klaus Fuchs' long spying on the US nuclear program, the latter two events both occurring during the US thermonuclear debate, are some of the most obvious examples. These events served as both real evidence of the Soviet Union's expansionist predilections and as fodder that shaped public opinion and the political environment of the late 1940s. As a result, the climate in Washington and across the country was vehemently anti-communist. As Oppenheimer found out soon after these events, arguing against developing a weapon like the hydrogen bomb was extremely difficult to justify in the court of public opinion.

Lawrence, Teller, Strauss, Johnson and McMahon formed a formidable team. Lawrence and Teller provided the scientific credibility and optimism necessary to initiate and sustain a short but vigorous push in the small policy circle that made the decision. Strauss effectively overwhelmed the opposition of the AEC majority through determination, energy, and political acumen. Johnson, with the strong backing of the Joint Chiefs, carried the enormous clout of speaking with one voice for the military establishment. Johnson's decision to circumvent the Special Committee and pass the Joint Chiefs' report directly to the White House demonstrated again his willingness to control information without regard for the potential political consequences in a manner similar to his blatant withholding of the Harmon report from the President earlier in 1949. However, there is no evidence that either action harmed his causes.¹³³ McMahon, as chairman of the most powerful legislative committee in US history, wielded outsized influence over both the nuclear establishment and the White House. The AEC was

¹³³ David Alan Rosenberg, "American Atomic Strategy and the Hydrogen Bomb Decision," *Journal of American History* 66, no. 1 (June 1979): 76-78; Janne E. Nolan, *Guardians of the Arsenal: The Politics of Nuclear Strategy* (New York: Basic Books, 1989), 44.

mandated by law to provide the JCAE with current information about every activity, allowing McMahon to directly influence the AEC and to address its positions in active dialogue with President Truman. Truman could not have chosen an alternate course without disagreement from his own cabinet and opposition from the extraordinarily powerful JCAE, which represented the entire legislative branch due to its control over information. While the cabinet's discontent might have remained muted inside the administration, the JCAE's aggressiveness in shaping thermonuclear policy likely would have led to public political opposition.

The AEC as an institution, on the other hand, held a surprisingly weak position. Its commission structure doomed it to speaking with a divided voice, with the nearly even split of opinion among its members severely muting any institutional authority. Furthermore, the JCAE's ability to demand the most current information available gave it a major advantage in addressing AEC and GAC arguments before they were able to gain any significant momentum. Finally, Lilienthal was preparing to retire and he had lost the assertiveness displayed in previous engagements with political adversaries (for example with the military over civilian control of the atomic stockpile a few months earlier).¹³⁴

Finally, Truman's own decisions pre-dating the Soviet explosion played a significant role in eliminating policy options. Throughout the late 1940s he slashed the military budget to such a degree that there was no viable conventional military response to a major Soviet attack in Europe. In May 1948 Truman placed a hard \$14.4 billion ceiling on the FY1950 defense budget, which he maintained despite vehement protests by the Joint Chiefs. The Joint Chiefs insisted the military needed approximately 50% more funding to maintain a credible conventional deterrent to Soviet aggression. In September 1948, amid the Berlin blockade, Truman codified planning for use of

¹³⁴ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 385-386, 399, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

atomic weapons in NSC-30. Rosenberg concluded that Truman's budget made the United States almost completely dependent on a nuclear defense.¹³⁵ Truman's willingness to accept that result coupled with his successful use of atomic weapons in the closing days of World War II undoubtedly impacted his thinking about the thermonuclear question.

Some have argued that Truman decided to pursue thermonuclear weapons quite early, and Truman indicated as much after the fact. Rhodes went so far as to argue that "the painful debates of autumn 1949...were little more than a White House public-relations ploy."¹³⁶ However, the evidence suggests that if that was the case Truman's decision was exceptionally quick for a significant policy decision since he was not aware of the possibility of thermonuclear weapons until at least 5 October, after the Soviet atomic explosion elevated the issue to policy makers' attention.¹³⁷ It is certain that there was no definitive policy on thermonuclear development before autumn 1949. As a result Truman effectively lost the ability to dictate the terms of the discussion, and his only claim to ownership of the decision is that he decided before he knew what he was deciding.

While it is impossible to argue with certainty against Truman having decided early, it is possible that he would have claimed that he did regardless of the truth, with the knowledge that was the only way to maintain the appearance of being in control. What is clear from the circumstances and facts is that by January 1950 President Truman was without options. When combined with a strongly anti-communist American public, an extraordinarily strong informal

¹³⁵ David Alan Rosenberg, "American Atomic Strategy and the Hydrogen Bomb Decision," *Journal of American History* 66, no. 1 (June 1979): 68-70.

¹³⁶ Gregg Herken, *The Winning Weapon: The Atomic Bomb in the Cold War, 1945-1950* (New York: Alfred A. Knopf, 1980), 320-321; Richard Rhodes, *Dark Sun: The Making of the Hydrogen Bomb* (New York: Simon & Schuster, 1995), 407.

¹³⁷ Richard G. Hewlett and Francis Duncan, *Atomic Shield, 1947-1952* (Washington, DC: Atomic Energy Commission, 1972), 374, accessed 18 October 2014, <http://www.osti.gov/scitech/servlets/purl/4582828>.

coalition of the JCAE, Secretary of Defense, Joint Chiefs, Secretary of State, and vocal scientists advocating and lobbying for development, events during the debate that continued to reduce any potential flexibility the President might have sought, and a weak and divided AEC, Truman's choice was really not a choice, for he had no options.

Schilling argued that President Truman's decision closed off the fewest options possible, in the words of his title "deciding without actually choosing." The basis for that argument was that Truman's decision in January 1950 officially only approved expanded technical feasibility work, but did not decide on the more significant resource allocation or weapon production questions that logically followed.¹³⁸ However, the evidence suggests that proceeding effectively made every decision short of when to use the weapons produced. While Truman's January 1950 announcement was admittedly limited, by March 1950 he approved a far more aggressive thermonuclear program pushed by the military to produce the hoped for weapons before determination of technical feasibility or the ongoing foreign policy review were complete. These facts indicate Truman knew when he approved accelerated thermonuclear development that successful results would not be filed away. If development proved feasible the weapons would be built.

As a result of the confluence of factors, whatever President Truman's preference might have been, by the time he actually arrived at a formal decision on 31 January 1950, there was no decision left to make. Current events, popular opinion, the political climate, pressure from significant political constituencies in both the executive and legislative branches, and the recommendation of his own Special Committee of the NSC had all overtaken the President's formal decision and made it all but certain. The note that the President found the military's

¹³⁸ Warner R. Schilling, "The H-Bomb Decision: How to Decide Without Actually Choosing," *Political Science Quarterly* 76, no. 1 (March 1961), 24-46, accessed 25 September 2014, <http://www.jstor.org/stable/2145969>.

argument persuasive when the White House provided copies of the Joint Chiefs' report to Acheson and Lilienthal suggests President Truman had already decided to proceed with thermonuclear development by 19 January 1950, then simply waited for the Special Committee to formally report its recommendation. However, while it is impossible to determine precisely when the President lost the freedom to choose, even by mid-January the pressure in favor of developing thermonuclear weapons was so strong that Truman would have had difficulty opposing it. Instead, the decision space in which Truman could have opted against development ran out almost immediately after he announced the Soviet atomic explosion when the debate escaped the confines of executive branch leadership. When the explosion occurred without a policy in place the only realistic options remaining for the President were slow or rapid development, and the GAC majority effectively eliminated the slow development option when its argument for unilateral renunciation became the *de facto* position of rapid development opponents.¹³⁹

¹³⁹ The record indicates Truman was not even aware of the possibility of thermonuclear weapons before the Soviet atomic test. See McGeorge Bundy, *Danger and Survival: Choices About the Bomb in the First Fifty Years* (New York: Random House, 1988), 201; Gregg Herken, *Brotherhood of the Bomb: The Tangled Lives and Loyalties of Robert Oppenheimer, Ernest Lawrence, and Edward Teller* (New York: Henry Holt, 2002), 202-203.

Bibliography

- “A Half Century’s Polling on the USSR and Communism.” *The Public Perspective* 3, no. 1 (November/December 1991): 25-34. Accessed 16 January 2015. [http://www.ropercenter.uconn.edu/public perspective/ppscan/31/31025.pdf](http://www.ropercenter.uconn.edu/public%20perspective/ppscan/31/31025.pdf).
- Acheson, Dean. *Present at the Creation: My Years in the State Department*. New York: W.W. Norton, 1969.
- Anders, Roger M. *Forging the Atomic Shield: Excerpts from the Office Diary of Gordon E. Dean*. Chapel Hill: University of North Carolina Press, 1987.
- Arneson, R. Gordon. “The H-Bomb Decision.” *Foreign Service Journal* 46/47 (May 1969): 27-29; (June 1949) 24-27, 43.
- Baruch, Bernard M. *Baruch: The Public Years*. New York: Holt, Rinehart and Winston, 1960. Accessed 9 January 2015. <http://hdl.handle.net/2027/mdp.39015002668203>.
- Becker, Abraham S. and Edmund D. Brunner. *The Evolution of Soviet Military Forces and Budgets, 1945-1953*. Prepared by RAND Corporation for Defense Advanced Research Projects Agency, September 1975. Accessed 2 March 2015. http://www.dod.mil/pubs/foi/Science_and_Technology/DARPA/551.pdf.
- Bergman, Harold. “International Control of Fission and Fusion Bombs [Selected Views of the Los Alamos Scientists].” Memorandum from Harold Bergman to William L. Borden. April 25, 1950. Accessed 4 October 2014. http://gateway.proquest.com/openurl?url_ver=Z39.88-2004&res_dat=xri:dnsa&rft_dat=xri:dnsa:article:CNP00063.
- Bernstein, Barton J. “Four Physicists and the Bomb: The Early Years, 1945-1950.” *Historical Studies in the Physical and Biological Sciences* 18, no. 263 (1988): 231-263. Accessed 20 January 2015. <http://www.jstor.org/stable/27757603>.
- Bernstein, Barton J. “The H-Bomb Decisions: Were They Inevitable?” In *National Security and International Stability*, edited by Bernard Brodie, Michael D Intriligator and Roman Kolkowicz, 327-356. Cambridge, MA: Oelgeschlager, Gunn & Hain, 1983.
- Bernstein, Barton J. “In Any Light: Scientists and the Decision to Build the Superbomb, 1952-1954.” *Historical Studies in the Physical and Biological Sciences* 19, no. 2 (1989): 267-347. Accessed 20 January 2015. <http://www.jstor.org/stable/27757627>.
- Bernstein, Barton J. “Truman and the H-bomb.” *Bulletin of the Atomic Scientists* 40, no. 3 (March 1984):12-18. Accessed 25 January 2015. <http://lumen.cgsccarl.com/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=11181297&site=ehost-live>.
- Bethe, Hans A. “Comments on the History of the H-Bomb.” *Los Alamos Science* 3, no. 3 (Fall 1982): 43-53. Accessed 8 February 2015. <http://library.lanl.gov/cgi-bin/getfile?06-03.pdf>.
- Bethe, Hans A. “The Hydrogen Bomb.” *Bulletin of the Atomic Scientists* 6, no. 4 (April 1950): 99-104, 125. Accessed 4 October 2014. <http://lumen.cgsccarl.com/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=21318563&site=ehost-live>.
- Bethe, Hans A. “Memorandum on the History of the Thermonuclear Program.” May 28, 1952. Accessed 4 October 2014. http://gateway.proquest.com.lumen.cgsccarl.com/openurl?url_ver=Z39.88-2004&res_dat=xri:dnsa&rft_dat=xri:dnsa:article:CNP00100.
- Blumberg, Stanley A. and Gwinn Owens. *The Life and Times of Edward Teller*. New York: G.P. Putnam’s Sons, 1976.

- Buck, Alice. *The Atomic Energy Commission*. US Department of Energy, Office of Management, Office of the Executive Secretariat, Office of History and Heritage Resources, July 1983. Accessed 15 September 2014. <http://energy.gov/sites/prod/files/AEC%20History.pdf>.
- Bundy, McGeorge. *Danger and Survival: Choices About the Bomb in the First Fifty Years*. New York: Random House, 1988.
- Churchill, Winston. "Sinews of Peace, 1946." National Churchill Museum. Accessed 10 January 2015. <http://www.nationalchurchillmuseum.org/sinews-of-peace-iron-curtain-speech.html>.
- Condit, Kenneth W. *History of the Joint Chiefs of Staff: The Joint Chiefs of Staff and National Policy*, Vol. II, 1947-1949. Washington, DC: Office of Joint History, Office of the Chairman of the Joint Chiefs of Staff, 1996.
- Defense Advanced Research Projects Agency. *The Evolution of Soviet Military Forces and Budgets, 1945-1953*, by Abraham S. Becker and Edmund D. Brunner, DARPA Report WN(L)-9248-ARPA (September 1975). Accessed 2 March 2015. http://www.dod.mil/pubs/foi/Science_and_Technology/DARPA/551.pdf.
- Fitzpatrick, Anne. "Igniting the Light Elements: The Los Alamos Thermonuclear Weapon Project, 1942-1952." PhD diss., Virginia Polytechnic Institute, 1999. Accessed 18 October 2014. <http://www.osti.gov/scitech/servlets/purl/10596>.
- Gavin, Francis J. *Nuclear Statecraft: History and Strategy in America's Atomic Age*. Ithaca, NY: Cornell University Press, 2012.
- Green, Harold P. and Alan Rosenthal. *Government of the Atom: The Integration of Powers*. New York: Atherton Press, 1963. Accessed 9 January 2015. <http://hdl.handle.net/2027/mdp.39015078146514>.
- Herken, Gregg. *Brotherhood of the Bomb: The Tangled Lives and Loyalties of Robert Oppenheimer, Ernest Lawrence, and Edward Teller*. New York: Henry Holt, 2002.
- Herken, Gregg. *The Winning Weapon: The Atomic Bomb in the Cold War, 1945-1950*. New York: Alfred A. Knopf, 1980.
- Hewlett, Richard G. and Francis Duncan. *Atomic Shield, 1947-1952: A History of the United States Atomic Energy Commission*, Vol. II. University Park, PA: Pennsylvania State University Press, 1969. Accessed 18 October 2014. <http://www.osti.gov/scitech/servlets/purl/4582828>.
- Hogan, Michael J. *A Cross of Iron: Harry S. Truman and the Origins of the National Security State, 1945-1954*. New York: Cambridge University Press, 1998.
- Holloway, David. *Stalin and the Bomb: The Soviet Union and Atomic Energy, 1939-1956*. New Haven, CT: Yale University Press, 1994.
- Leffler, Melvyn P. *A Preponderance of Power: National Security, the Truman Administration, and the Cold War*. Stanford, CA: Stanford University Press, 1992.
- Leffler, Melvyn P. "The American Conception of National Security and the Beginnings of the Cold War, 1945-48." *American Historical Review* 89, no. 2 (April 1984): 346-381.
- Leffler, Melvyn P. "Strategy, Diplomacy, and the Cold War: The United States, Turkey, and NATO, 1945-1952." *Journal of American History* 71, no. 4 (March 1985): 807-825.

- Lilienthal, David E. *Change, Hope, and the Bomb*. Princeton, NJ: Princeton University Press, 1963.
- Lilienthal, David E. "Where Do We Go From Here?" *Bulletin of the Atomic Scientists* 5, no. 11 (November 1949): 294-308.
- Los Alamos Scientific Laboratory. *A Short Account of Los Alamos Theoretical Work on Thermonuclear Weapons, 1946-1950*, by J. Carson Mark. Report LA-5647-MS. Los Alamos, NM: Los Alamos Scientific Laboratory, July 1974. Accessed 15 September 2014. <http://library.lanl.gov/cgi-bin/getfile?00377295.pdf>.
- Los Alamos Scientific Laboratory. *Manhattan District History, Project Y, The Los Alamos Project*, vol. I, by David Hawkins. Report LAMS-2532 (Vol. I). Los Alamos, NM: Los Alamos Scientific Laboratory, 1 December 1961. Accessed 12 April 2015. <http://library.lanl.gov/cgi-bin/getfile?LAMS-2532.htm>.
- Mark, Eduard. "The War Scare of 1946 and its Consequences." *Diplomatic History* 21, no. 3 (Summer 1997): 383-415.
- Mastny, Vojtech. *The Cold War and Soviet Insecurity: The Stalin Years*. New York: Oxford University Press, 1996.
- McFarland, Keith D. and David L. Roll. *Louis Johnson and the Arming of America: The Roosevelt and Truman Years*. Bloomington, IN: Indiana University Press, 2005.
- Moss, Norman. *Men Who Play God: The Story of the H-bomb and How the World Came to Live With It*. New York: Harper & Row, 1968.
- Murray, Thomas E. *Nuclear Policy for War and Peace*. Cleveland: The World Publishing Company, 1960.
- Nieburg, Harold L. *Nuclear Secrecy and Foreign Policy*. Washington, DC: Public Affairs Press, 1964.
- Nolan, Janne E. *Guardians of the Arsenal: The Politics of Nuclear Strategy*. New York: Basic Books, 1989.
- Oppenheimer, J. Robert. "Oppenheimer Replies." *Bulletin of Atomic Scientists* 10, no. 5 (May 1954): 177-187, 191. Accessed 8 February 2015. <http://content.ebscohost.com/lumen.cgsccarl.com/ContentServer.asp?T=P&P=AN&K=21307320&S=R&D=a9h&EbscoContent=dGJyMNHr7ESeprY4xNvgOLCmr02ep7JJsay4SbSWxWXS&ContentCustomer=dGJyMPGot1CxrLFJuePfgeyx44Dt6fIA>.
- Pearl, Jonathan. *Forecasting Zero: US Nuclear History and the Low Probability of Disarmament*. Carlisle, PA: US Army War College Strategic Studies Institute, November 2011.
- RAND Corporation. *Implications of Large-Yield Nuclear Weapons*. Report R-237. Santa Monica, CA: July 10, 1952. Accessed 4 October 2014. http://gateway.proquest.com/openurl?url_ver=Z39.88-2004&res_dat=xri:dnas&rft_dat=xri:dnas:article:CNH00047.
- Rhodes, Richard. *Dark Sun: The Making of the Hydrogen Bomb*. New York: Simon & Schuster, 1995.
- Rhodes, Richard. *The Making of the Atomic Bomb*. New York: Simon & Schuster, 1986.
- Rosenberg, David Alan. "American Atomic Strategy and the Hydrogen Bomb Decision." *Journal of American History* 66, no. 1 (June 1979): 62-87.

- Rosenberg, David Alan. "The Origins of Overkill: Nuclear Weapons and American Strategy, 1945-1960." *International Security* 7, no. 4 (Spring 1983): 3-71. Accessed 13 April 2015. <http://www.jstor.org/stable/2626731>.
- Sale, Sara L. *The Shaping of Containment: Harry S. Truman, the National Security Council, and the Cold War*. New York: Brandywine Press, 1998.
- Sandia National Laboratories. *A Primer on US Strategic Nuclear Policy*, by David M. Kunsman, and Douglas B. Lawson. Sandia Report SAND2001-0053. Albuquerque, NM: Sandia National Laboratories, 2001.
- Sawyer, Roland. "The H-Bomb Chronology." *Bulletin of Atomic Scientists* 10, no. 7 (September 1954): 287-290, 300. Accessed 6 February 2015. <http://content.ebscohost.com/lumen.cgsccarl.com/ContentServer.asp?T=P&P=AN&K=21330854&S=R&D=a9h&EbscoContent=dGJyMNHr7ESeprY4xNvgOLCmr02ep7FSrqy4TK6WxWXS&ContentCustomer=dGJyMPGot1CxrLFJuePfgeyx44Dt6fIA>.
- Schilling, Warner R. "The H-Bomb Decision: How to Decide without Actually Choosing." *Political Science Quarterly* 76, no. 1 (March 1961): 24-46. Accessed 25 September 2014. <http://www.jstor.org/stable/2145969>.
- Schwartz, Stephen I. "Congressional Oversight of U.S. Nuclear Weapons." National Threat Institute. Accessed 31 December 2014. <http://www.nti.org/analysis/articles/congressional-oversight-nuclear-weapons/>.
- Strauss, Lewis L. *Men and Decisions*. Garden City, NY: Doubleday, 1962.
- Thomson, George. "Hydrogen Bombs: The Need for a Policy." *International Affairs* 26, no. 4 (October 1950): 463-469.
- Truman, Harry S. *Memoirs by Harry S. Truman*, Vol. II. Garden City, NY: Doubleday, 1955.
- US Atomic Energy Commission. *In the Matter of J. Robert Oppenheimer*, Vol. V. Transcript of hearing before the Personnel Security Board held April 16, 1954. Accessed 4 February 2015. <http://www.osti.gov/includes/opennet/includes/Oppenheimer%20hearings/Vol%20V%20Oppenheimer.pdf>.
- US Atomic Energy Commission. *In the Matter of J. Robert Oppenheimer*, Vol. XII. Transcript of hearing before the Personnel Security Board held April 27, 1954. Accessed 4 February 2015. <http://www.osti.gov/includes/opennet/includes/Oppenheimer%20hearings/Vol%20XII%20Oppenheimer.pdf>.
- US Atomic Energy Commission. Memorandum to the President regarding custody of the atomic weapons stockpile dated July 21, 1948. Digital National Security Archive. Accessed 9 January 2015. <http://nsarchive.chadwyck.com/lumen.cgsccarl.com/nsa/documents/NP/00049/all.pdf>.
- US Congress. Joint Committee on Atomic Energy. *The Hydrogen Bomb and International Control: Technical and Background Information*. Washington, DC: Government Printing Office, July 1950. Accessed 4 October 2014. <http://babel.hathitrust.org/cgi/pt?id=mdp.39015001554529;view=1up;seq=1>.
- US Department of Energy. *The Manhattan Project: Making the Atomic Bomb* 2010 ed., by F.G. Gosling. Office of History and Heritage Resources, Executive Secretariat, Office of Management. Accessed 15 September 2014. http://www.osti.gov/manhattan-project-history/publications/Manhattan_Project_2010.pdf.

- US Department of State. *A Report on the International Control of Atomic Energy*, by Chester I. Barnard et al. Washington, DC: Government Printing Office, 1946. Accessed 4 October 2014. <http://hdl.handle.net/2027/uc1.b3909672>.
- US Department of State. *The Department of State Bulletin* XXI, no. 535 (October 3, 1949): 487.
- US Department of State. *Foreign Relations of the United States 1946: Eastern Europe; The Soviet Union*, Vol. VI. Washington, DC: Government Printing Office, 1969.
- US Department of State. *Foreign Relations of the United States 1947: General; The United Nations*, Vol. I. Washington, DC: Government Printing Office, 1973.
- US Department of State. *Foreign Relations of the United States 1948: General; The United Nations*, Vol. I, Part I. Washington, DC: Government Printing Office, 1975.
- US Department of State. *Foreign Relations of the United States 1948: General; The United Nations*, Vol. I, Part II. Washington, DC: Government Printing Office, 1975.
- US Department of State. *Foreign Relations of the United States 1949: National Security Affairs; Foreign Economic Policy*, Vol. I. Washington, DC: Government Printing Office, 1976.
- US Department of State. *Foreign Relations of the United States 1950: National Security Affairs; Foreign Economic Policy*, Vol. I. Washington, DC: Government Printing Office, 1977.
- US Department of State. *Foreign Relations of the United States 1951: National Security Affairs; Foreign Economic Policy*, Vol. I. Washington, DC: Government Printing Office, 1979.
- US Department of State. *The International Control of Atomic Energy: Policy at the Crossroads: An Informal Summary Record of the Policy Developments Concerning the International Control of Atomic Energy, October 15, 1946 to May 17, 1948*. Washington, DC: Government Printing Office, 1948.
- US Library of Congress. Congressional Research Service. *Defense Budget for FY2003: Data Summary*, by Stephen Daggett and Amy Belasco. CRS Report RL31349. Washington, DC: Office of Congressional Information and Publishing, March 29, 2002. Accessed 20 January 2015. <http://fpc.state.gov/documents/organization/9665.pdf>.
- York, Herbert F. *The Advisors: Oppenheimer, Teller, and the Superbomb*. San Francisco: W.H. Freeman, 1976.